The Chemical Age

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Colonial Trade

THERE is little new to be said on the subject of developing colonial trade. But the need of strengthening the industrial ties between ourselves and our own colonies has been increasingly emphasised in recent years, and if, as people say, we have largely lost some important overseas markets for good, the need is all the greater for developing Empire trade to the very fullest extent. Already many of our colonies are important chemical markets and also important manufacturers of chemicals and sources of raw materials. Canada, as its admirable intelligence service constantly reminds us, is chemically of the utmost importance on account of its mineral resources, its nickel production, and the large chemical plants operating in many districts. South Africa is another important centre. Australia and New Zealand and other parts of the Empire equally demand attention.

In some cases, instead of being content to ship our chemical products overseas, the alternative policy of setting-up production units on the spot has been followed. But even this policy is not hostile to the home country's industry. For the products of different countries or colonies meet the needs of one another, rather than each one completely supplying its own needs, and our benefit is to be found in the closest possible interchange of goods between ourselves and our own overseas possessions. Export chemical trade admittedly has been difficult of late. It is still, however, a very considerable national asset, and the difficulty of the times is a reason rather for intensified than for relaxed effort. Better times are certain to return eventually, and those firms that confidently believe in them will be the first to reap the benefits of their confidence.

After the Exhibition

Now that the Chemical Plant Exhibition is over, it is possible to sum up its main results. During the earlier part of the week there was some little anxiety about the attendance, in view of the many counter attractions elsewhere and the heavy expense that exhibitors had necessarily incurred. Before the week was over, however, all doubts were set at rest, Verbal inquiry among the exhibitors showed that there was unanimous satisfaction with the success of the venture. Many firms received useful orders, while the number of promising inquiries was particularly large and gratifying. Visitors also expressed their appreciation in unmistakable terms, and invariably indicated their satisfaction at the large number of novelties and new developments in the way of constructional materials, design and fabrication, available for their inspection. Apart from some two to three hundred visitors from the general public who visited the Exhibition during the last two days, the attendance was 3,250. This was considerably greater than in 1926, and is very satisfactory when it is remembered that the majority of the visitors were technicians closely connected with the chemical and other industries using chemical plant.

There was a fair sprinkling of foreign visitors, and a very gratifying feature was the fact that a distinguished party of some twenty German industrialists came over specially to see the exhibition, and spent two days looking round. They expressed high appreciation of what was to be seen. Dr. Buchner and Dr. Bretschneider, the President and Secretary respectively of the German Dechema or Chemical Plant Association, which organises the Achema, spent the whole week at the Exhibition, and were enthusiastic in their praise of the British effort. They said that their second Achema was considerably smaller than the Exhibition at the Central Hall, and from this it may be hopefully expected that future British exhibitions of this kind will grow in the same way as the Achema has grown. There were a great many foreign industrialists who regretted their inability to attend, but to whom copies of the catalogue were sent. In all,

some 4,000 catalogues were issued, and this must undoubtedly redound to the ultimate advantage of exhibitors.

Many exhibitors have already been asking when the next Exhibition is to be held. In this connection the British Chemical Plant Manufacturers' Association received a notification from the French that they are proposing to hold a Chemical Plant Exhibition of their own in 1932. The French also suggested that arrangements might be made between Great Britain, France, and Germany, so that the exhibitions in the three countries do not clash. The proposal which was finally reached as a result of a discussion between Dr. Buchner and Dr. Bretschneider, and the officials of the British Chemical Plant Manufacturers' Association, was that each country should hold an exhibition once in three years; the French one to be in 1932, the next German Achema in 1933, while there might be a British exhibition in 1934. The three countries would collaborate in securing widespread publicity for each exhibition. This is an attempt at international collaboration which cannot fail to be of the greatest benefit to the chemical plant industry in each of the countries concerned, and it is confidently hoped that this proposal will ultimately be accepted by all three parties.

In certain quarters, we understand, there had been some criticism and on inquiring what was wrong all one could discover was that certain visitors regretted that they had not heard of the exhibition until a few days before it opened. The obvious retort is "What trade publications do they read?" If they content themselves with journals published once a month or once a quarter, and usually about that period behind current events, they have only themselves to blame for not knowing what is going on. The organising staff of the exhibition, under the general direction of Mr. Davidson Pratt, worked with rare enthusiasm for many weeks preceding the exhibition, and there can be no excuse for any firms interested in chemical plant failing to keep themselves informed of the arrangements.

As illustrating the serious interest taken by overseas visitors in the exhibition, we found on the afternoon of Friday, Professor Jackson, of Columbia University, quietly inspecting the literature on THE CHEMICAL AGE stand. Renewing an old acquaintanceship, we began to discuss the quality of the exhibits. Professor Jackson could hardly imagine any doubt about the value of such exhibitions, which he regards as highly educational and as leading to valuable business "contacts." In connection with the New York Plant Exposition, it has been found that people make note of the things that interest them, and long afterwards recall the product and the maker's name when the time comes for renewal or purchase. That is the real meaning and purpose of such exhibitions. It takes some time to familiarise people with the idea. But when an exhibition is once established, visitors learn to attend, to inspect the products, to pick up new information and ideas, and to keep the information for future use. This year's London exhibition has answered all these purposes exceedingly well, and its organisers deserve congratulations on their labours and on the results.

Colour Users' Policy

THE most definite point, and perhaps the most important, in Sir Sutcliffe Smith's address to the annual meeting of the Colour Users Association was his frank acceptance of his own Council's policy that the Dyestuffs Act should be allowed to lapse at the end of this year. The chairman of the colour users has striven hard to reconcile the interests of the dyestuffs manufacturers with those of the users, and this declaration means that compromise has reached its limits. It is made in the friendliest spirit, but the terms are clear, and the decision, as we have said, is important. This does not mean, of course, that the Dyestuffs Act will definitely cease to operate at the end of this year. A change of Government, for example, might altogether alter the prospects. All it means is that the users will oppose the further renewal of the Act.

Apart from this matter, there were many other interesting points in the address. One of the most ticklish is the method of deciding whether the British price is not higher than the foreign. The price factor based on pre-war prices has now disappeared, but import licences may still be refused, where British makers are prepared to supply equivalent products at prices not above those quoted by foreign makers. The practice is that where a foreign maker quotes, say, 10s., the British maker has 48 hours to decide whether he can supply at the same price. This course means that the foreign price has to be disclosed to the British maker before he decides, and a "cut" down to the foreign price will always keep the foreign product out. One is not surprised to hear that foreign firms decline to quote on these terms. Sir Sutcliffe Smith is with them on this point, believing that the British makers should state their own lowest prices without first having the foreign competitive prices before them.

It is pleasant to read Sir Sutcliffe Smith's generous testimony to the great progress in dyestuffs production made in this country. Imperial Chemical Industries alone have, within recent times, produced no fewer than forty new colours for the textile industries, many of them of marked importance and formerly imported in large quantities. Equally notable is his acknowledgment that the service and technical assistance now provided by British makers are not excelled by any foreign makers. A field that he commends to the attention of the British makers is the production of cheaper fast dyes for the mass trade in place of the more expensive vat colours.

In his speech last week in London, Dr. Levinstein criticised the lack of desire on the part of British users to give preference to British products. More than one speaker who followed Sir Sutcliffe Smith took exception to the criticism, and reference was made to the loyalty with which the colour users had accepted the restrictions of the Dyestuffs Act in order to build up a national industry. Without intervening in this controversy, it may be mentioned that Dr. Levinstein was not referring to recent years or to the period during which the Dyestuffs Act has been in operation. He was referring to earlier days when private firms like his own were striving, without any Government aid, to keep the British industry alive against vigorous German competition.

British Chemical Plant of Many Types

A Final Survey of the London Exhibition

By a "C.A." Staff Representative.

THE British Chemical Plant Exhibition, organised at the Central Hall, Westminster, by the British Chemical Plant Manufacturers Association, came to a successful conclusion on Saturday last, July 18, when a final tour of the stands and interviews with standholders elicited the information that this exhibition had fully served its purpose. A good attendance of visitors was maintained throughout the week, among whom overseas visitors, chiefly American and Continental, were in evidence. Most of the firms exhibiting were successful in getting into touch with serious, new prospective users of their plant. In some cases as many as fifty direct inquiries were received; actual orders were also booked in good proportion. Those exhibitors who did not find new friends were, nevertheless, welcomed by all their old friends who had seized upon the opportunity to inspect this wide range of plant and equipment which had been gathered together for the benefit of the chemical and chemical-using industries. Even here, good work was accomplished in presenting the very latest developments in the particular lines of goods manufactured, which could not have been so readily done in the absence of the Exhibition.

Impressions on this Exhibition, calling attention to salient points were published in THE CHEMICAL AGE, July 18, together with illustrations of many of the stands and some of the principal exhibits. A detailed description of the whole of the exhibits, embodying a considerable amount of information upon recent developments, appeared in THE CHEMICAL AGE, July 11. It is, however, felt that a third and final survey of this exhibition is fully justified, as so much of the plant and equipment shown was of particular interest to colonial readers.

A Tour of the Stands

Taking a casual glance round this Exhibition, three outstanding things became self-evident. In the first place, it was quickly realised that aluminium is rapidly gaining ground as a constructional material as there were three individual firms who exhibited aluminium plant (Birmal Chemical Engineers, Stand B 36; The Aluminium Plant and Vessel Co., Ltd., Stands A 1 and A 9; and The London Aluminium Co., Ltd., Stand B 34) to which the dimensions of the floor space occupied proudly did justice. In the second place, it was noticed that there was only one exhibitor of acid-proof chemical stoneware (The Hathern Station Brick and Terra Cotta Co., Ltd., Stand B 19), although pumps embodying the use of Doulton stoneware were shown as individual items on Stand B 15, occupied by Gwynne's Pumps, Ltd. Thirdly, three minutes of your time spent at Stand A 6 (Cannon Iron Foundries, Ltd.) soon convinced you that really good, serviceable enamel-lined cast iron plant is obtainable, for here was an open jacketed pan of 50 gallons capacity, which had been in continual use at a well-known chemical works on the outskirts of London for five and a half years, during which time it had handled some 700 tons of material, in a state evaporated almost to dryness, without showing any visible signs of injury to the enamel lining. If you were still a little sceptical of enamelled ware you could obtain further evidence of its serviceable nature at Stand B 11, where an exhibit was staged by T. and C. Clark and Co., Ltd.

With more detailed notice of the exhibits we find that aluminium is now being brought into great prominence for transport tanks, which give a saving in weight as compared with steel tanks of similar capacity and therefore allow a

Photograph by F. A. Swaine.

"THE CHEMICAL AGE" STAND AT THE BRITISH CHEMICAL PLANT EXHIBITION.

greater useful load to be carried by the chassis. Aluminium drums, provided with iron rolling hoops, are also coming into favour. Pure fused silica, better known in the chemical industry as Vitreosil, is making great headway in regard to the limiting sizes at which pipes and vessels can be fabricated in this material. Looking back to the time when this material was first introduced, and comparing these pioneer efforts with the massive pipes and bends which formed an imposing entrance to Stand A 10, occupied by The Thermal Syndicate, Ltd., we dare not think that progress in certain branches of the chemical industry could have been so rapid without the aid of this acid-proof and heat-resisting material. For instance, the synthetic hydrochloric acid plant exhibited at this stand was constructed entirely in Vitreosil, as were also the large condensing coils and large receivers of over 100 gallons capacity.

A New Forced-Circulation Evaporator

Turning to Stand A 15 (George Scott and Son, London, Ltd.) where the plant had a distinct refinement of its own, it was a pleasure to notice how much careful thought has been put into the design and construction of a new patent forced-circulation type of vacuum evaporator with an external calandria. Here the density of the liquid could be increased almost to the point of solidification, which is impossible in an evaporator which is entirely dependent on natural circulation. On this stand there was also a small scale vacuum dryer on the most compact lines, which had several unique features. At the other side of this hall, at the exhibit of the Cannon Iron Foundries, Ltd. (Stand A 6) the remarkably clean castings which are made by this firm attracted considerable attention, and for those interested in small scale experimental plant the recovery still complete with condenser and receiver, as used in the manufacture of synthetic resins, was well worthy of detailed inspection.

In the basement there was a wide variety of plant to be found on Stand B 17, occupied by The Kestner Evaporator and Engineering Co., Ltd., among which particular attention might be drawn to the new patent of E.M.S. dryer which can be used for the removal of moisture from semi-dry granular products and filter press cakes. This plant is built in sectional form so that it is relatively easy to increase the output by adding further sections. The Kestner silica gel air dryer, shown on this stand, was also new, and is claimed to be capable of dealing with 1,000 cubic feet of air per minute, reducing the moisture content by 90 per cent. The increasing use of precious and semi-precious metals was in evidence at the exhibit of Johnson, Matthey and Co., Ltd. (Stand B 20), for here was some really wonderful work in silver, but if you are not wealthy enough to purchase solid silver plant for acetic acid you can have your existing copper pans lined with any desired thickness of pure silver ranging from $\frac{1}{32}$ inch upwards at a considerable saving in the amount of capital which would be locked up if solid silver were employed. Alongside this stand the Hathern Station Brick and Terra Cotta Co., Ltd. (Stand B 19) were showing some acid-proof tiles suitable for building up linings to large concrete or metal tanks where acid liquids are in use.

Extended Uses for Silica Gel

Silica gel, as introduced by Silica Gel, Ltd. (Stand B 22) continues to find applications in the purification of industrial gases (including carbon dioxide from fermentation processes, and acetylene), and in the dehydration of air which may be essential where certain manufacturing operations are in progress. With drying as a chemical engineering problem and the occasional need to increase the capacity of your plant, effective drying stoves, which can be built up on the unit principle, were exhibited at Stand B 28 (L. A. Mitchell, Ltd.). A small-scale working model of a continuous self-discharging centrifugal separator for treating slurry, of all kinds, containing up to 10 per cent. of mixture, was shown by Thomas Broadbent and Sons, Ltd. (Stand A 12). The continuous agitation, classification, thickening, washing and filtering of a variety of mixtures of liquids and solids is a matter for the attention of The Dorr Co., Ltd., at Stand B 21; clarification of solvent liquids could be left to the attention of Manlove, Alliott, and Co., Ltd. (Stand B 29), who were showing a new patent leaf filter which has many novel features; grinding and sifting machinery was found on Stand B 10 (Wm. Gardner and Sons, Gloucester, Ltd.) and B 2 (J. Harrison Carter, Ltd.). On the latter stand there was a new flat sifter working on the vibrating principle, and a new 9 inch disintegrator which can be used for either laboratory purposes or for large scale work.

Steels of Many Qualities

That nickel and nickel steels find many applications in modern chemical plant became evident from a perusal of the literature available at Stand B 27 (Mond Nickel Co., Ltd.). Special acid-resisting and heat-resisting steels have slowly forged ahead under the care of Thos. Firth and John Brown, Ltd. (Stands B 13 and B 25), Brown Bayley's Steel Works, Ltd. (Stand A 17), and Hadfields, Ltd. (Stand A 7). The welding of stainless steel tanks and vessels showed good progress at Stand B 30 (Thompson Bros., Bilston, Ltd.) who now claim that they can weld all stainless alloys so that the weld is as stainless as the plate. There were also other exhibitors who deserved inspection, such as S. H. Johnson and Co., Ltd. (Stand B 6) for filter presses; Siebe, Gorman and Co., Ltd. (Stand B 7) for your interests regarding the safety of your workmen; The Lennox Foundry Co., Ltd. (Stand B 4) in respect of centrifugal pumps, rotary vacuum pumps and blowers in corrosion resisting metals; Haughton's Patent Metallic Packing Co., Ltd. (Stand B 32) for equipment constructed in silicon iron alloys; and The Hydronyl Syndicate, Ltd. (Stand B 18) where there was interesting data on the fractional distillation of liquid hydrocarbons, alcohols and acetone, and upon the use of the Lessing patent contact ring filling for scrubbers at absorption towers.

The British Chemical Plant Manufacturers' Association is to be congratulated on this exhibition which they organised. The manufacturers who responded are to be complimented on the quality and workmanship of the plant which was shown. The Chemical Engineering Group also did good service in arranging a special exhibit showing the interrelationship of research with the chemical engineering industry (Conference Hall), and it is hoped that users of plant will fully appreciate the value of this research and the efforts of British manufacturers to show us that chemical plant of British origin is obtainable, is usable, truly serviceable and efficient.

German Expert's View

Warm Tribute by Dr. Buchner

In his speech at the inaugural luncheon of the British Chemical Plant Exhibition, Dr.-Ing. Max Buchner said: In England chemistry has always occupied a position of honour among the sciences, due to the natural development of your country, and it is well known that it was the development of cotton spinning and weaving that stimulated the first developments of your inorganic chemical industry. Now this industry, which began in the production of sulphuric and hydrochloric acids and soda, with which was associated the manufacture of bleaching powder, so important for the bleaching of fabrics, has become one of the greatest in your country and a factor of world significance.

Not only as an industry but as a science has chemistry flourished here, for two of the greatest chemists of all time were sons of this country—namely, Davy and Faraday—and it is generally recognised that the work of these two men carried out at the beginning of the last century, has had an influence which is still perceptible at the present day. Among the modern scientists there can be few whose names are so clothed with magic as those of Cook and Ramsay. In your country, moreover, it was not only chemistry but applied science as a whole that underwent development. James Watt invented the steam engine and Stephenson the railway locomotive, two of the greatest discoveries that the world has known, which revolutionised human life to an amazing extent, making possible the conquest of distance which now enables us to travel so speedily and safely about the world.

Does Science Destroy Soul?

It has been said about applied science that it robs man of heart and feeling and destroys his soul, but though such cases may have arisen I feel sure that you will agree with me that the generalisation is a false one. Science has supplied man with endless blessings and if it had done no more than create the means of transport and communication it would have supplied man's greatest needs, the need for communication

between individuals separated in space, and the need for transport to enable men to come together and join in harmonious co-operation.

This is the sense in which we have accepted your friendly invitation, and I should like to say how glad I am on behalf of the Dechema (Deutsche Gesellschaft für chemisches Apparatewesen), the German Society of Chemical Apparatus, to offer our co-operation. Further, I must tell you that we have come here to express our thanks to you, Englishmen, that you have been our teachers in many a connection. Your great and well established culture was centuries ahead of ours and was therefore a great stimulus to us; if I may be permitted a chemical metaphor, I would say that you exercised a catalytic influence on us.

Chemical Plant in Germany

If we in Germany have attempted to develop chemical plant, this has surely been done for the same reasons as those that actuated you, namely, that we realised that advance was not possible in either scientific or industrial chemistry unless the chemist were supplied with the best tools. These artificial aids to the execution of chemical reactions, to the preparation of the reactants and the treatment of the products, are what we understand by the term chemical apparatus, quite apart from whether the purpose is industrial or scientific. It is the whole field of chemical apparatus thus defined, which the Dechema has made its province. The advancement of chemical plant technology is attempted in many ways but in particular by the publication of a periodical, *Die Chemische Fabrik* ("The Chemical Factory"), devoted to the subject, this being owned by the "Verein Deutscher Chemiker" (German Chemists' Society) a body with which we stand in the most intimate relationship. The Dechema is also responsible for a movement for the standardisation of chemical apparatus and for exhibitions, the so-called Achemas. It gave us great pleasure in Germany to see to what extent our efforts were recognised by your English technical publications and to hear the Achema described as a model for similar exhibitions in England.

Quality of British Products

We are convinced of the success of your exhibition and of the fact that it gives a representative review of the chemical plant industry and its inventiveness and efficiency, for it is recognised as a tradition in the history of British technology that problems are attacked with unflagging energy and boundless resource until the desired solution is attained. In Germany we recognise and admire the highly developed practical sense and the keen intuition of your technicians and we take it as a matter of course that your industries, and in particular the chemical plant industry, translates the inspiration of your inventors into concrete form, that is into products of the highest quality.

I look forward to the moment when I shall be able to admire the high level of development and the recent advances of your chemical apparatus industry and it will be a pleasant duty to convey to my country the news of what I have been fortunate enough to see here. England and Germany have long been good customers of one another and it is one of the functions of exhibitions such as these to expand our international trade. We therefore hope to see you in 1933 at the seventh Achema in Cologne, either as exhibitors or as visitors, and I should like to take this immediate opportunity of offering you our most cordial invitation.

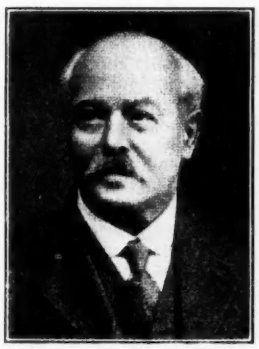
The whole of the present-day life is conditioned by our modern methods of transport and communication. Everyone, of whatever class or profession, whether chemist, physicist, engineer or technician, is of necessity influenced in the greater part of his activity by the results of the work of your great James Watt and Stephenson and the whole of our civilising world trade springs from the same origins. Modern transport has made it possible for a score of my compatriots to come to visit your exhibition in London, and like Dr. Bretschneider, the Secretary of the Dechema, and myself, they will look forward to seeing much that is of interest and beauty in your country.

In conclusion, I should like to thank you in the name of the Dechema for the kind invitation and the friendly reception you have given us, and to say that I look forward to a period of fruitful co-operation between your society and the Dechema. For all your activities, particularly your exhibition, I wish you the greatest success.

Death of Mr. P. G. W. Typke

Founder of Typke and King, Ltd.

It is with deep regret that we have to record the death of Mr. P. G. W. Typke, F.I.C., F.C.S., which occurred on Friday, July 17. The late Mr. Typke was a joint founder of the firm of Typke and King, Ltd., of Mitcham Common (1883), with which he had since been closely associated as governing director. The works occupied by this firm now cover 11 acres of ground, and produce heavy and fine chemicals in addition to those required for the india-rubber and allied industries. Born in 1856, Mr. Typke was educated at the Philological School in London, the Royal College of Science, and the University of Berlin. In his early days he was connected with the firm of Williams, Thomas and Dower, Aniline Dye Works, Brentford, and Foster and Gregory, of Streatham. His contributions to the chemical literature included papers on diazo benzol derivatives and the nitro-derivatives of resorcin. The funeral took place at Norbiton Cemetery, on Tuesday last, July 21.



THE LATE P. G. W. TYPKE

Essential Oils in Germany

A Potential Market for Colonial Produce

Despite a large production of essential oils and similar products in Germany and a very substantial export trade, there exists a considerable deficiency in available supplies of certain essential oils within the country, which is furnished by importation. Imports of natural essential oils into Germany during 1930 totalled 1,073,200 kilos, valued at £605,000, as compared with 1,413,000 kilos, valued at £840,000, in 1929, and 1,498,100 kilos, valued at £775,000, in 1928. The large German production of medicinal and pharmaceutical preparations, perfumes, and other toilet preparations, toilet and medicated soaps, flavouring extracts, foodstuffs and the growing development of a number of other essential oil consuming industries created in that country a large demand for essential oils.

The principal centres of essential oil consuming industries in Germany are in Hamburg, Bremen, Berlin, Leipzig, and other large industrial cities of northern Germany and in the Frankfort district. Purchases of imported oils, however, are principally handled through importers and wholesalers in Hamburg and Berlin. At present, the United States supplies principally peppermint, wormseed, wintergreen, spearmint, pine and cedarwood oils to the German market; United States export sales of orange oil to Germany are also expanding.

A New Synthetic Wax of U.S. Origin

According to our American contemporary, *Oil and Fat Industries*, glycera wax, a new synthetic wax, is now being produced in commercial quantities in the United States. This wax is of a light tan colour, melting at about 140° F. It is odourless, tasteless, and edible, and is more soluble than any of the natural waxes. Turpentine will dissolve more than 12 per cent. of its weight to give a permanently clear solution; it is also somewhat soluble in alcohol. Glycera wax is unique in that although it is insoluble in water, it can be dispersed in water very readily without any emulsifying agent. For example, if one part of glycera wax is melted in ten parts of water and stirred while cooking, it disperses and forms a white cream when cold. If a larger amount of water is used, a thin milky emulsion results. Both of these dispersions, moreover, are exceedingly stable. The wax can be used as a softener in rubber, and under certain conditions as a plasticiser in lacquers. It blends readily with other waxes and resins.

Colour Users and the Dyestuffs Industry

General Survey by Sir Sutcliffe Smith

At the annual meeting of the Colour Users Association in Manchester on Friday, July 17, the Chairman (Sir H. Sutcliffe Smith) reviewed at length the conditions in the colour industry during the year. He expressed the hope that dyestuffs manufacturers and users would now agree that the Dyestuffs Act should be allowed to elapse at the end of this year.

REFERRING to the fact that the Board of Trade had continued the exemption of oxalic acid from the safeguarded list for a further period of twelve months, Sir Sutcliffe Smith said it was unfortunate that British manufacturers had not taken advantage of this Act to produce this important chemical in this country. Whilst not denying the advantage of this Act to British producers—a form of protection approved by modern economists—there was a practical danger of the establishment of a monopoly in the commodities protected. This had happened in regard to two chemicals used in large quantities by colour users where, as the result of this Act, those two chemicals were made by only two British makers. While progress had undoubtedly been made in reducing the prices as the output grew, there was a danger of the full benefit of the Act being lost by the absence of British competition. On the other hand, experience had shown that but for the Safeguarding Act, in the case of those two chemicals, they would have been at the mercy of a foreign convention, and an examination of the price records of the past few years showed that since the introduction of British competition the price tendency has been steadily lower. He appealed to British manufacturers, when determining the prices of these protected commodities, to have full regard to ruling foreign prices, so as not to place British users in a disadvantageous competitive position.

Benzol and Toluol

He had repeatedly, during the past few years, made references to the effect which the high prices of benzol and toluol had upon the costs of dyestuffs. The position to-day was worse than a year ago. The excise duty on petrol had now been increased to no less a figure than 6d. per gallon, and the British benzol makers had added the whole of this to the price charged to dyemakers. The price of pure benzol in this country to-day was about 1s. 9d. per gallon, actually double the price ruling in the U.S.A. This difference was a serious handicap to British dyestuffs makers, when its relation to the price of aniline oil was considered. Petrol was being sold at prices that left very little at the refineries, but he could not imagine that it was contemplated by the Government when they introduced this duty that they were actually putting 6d. per gallon into the pockets of the British benzol makers at the expense of the users of that commodity. He again appealed to the benzol manufacturers to take a national view and, at this critical period in our industrial history, lighten the burden which the high prices of these commodities imposed upon the British dye makers, and, indirectly, upon colour users.

British Dyestuffs Industry

It was gratifying again to report steady progress of the British dyestuffs industry despite the reduction of 23% in the output compared with the previous year. From statistics furnished him by the Board of Trade he was able to give the production during the nine years ended 1930 in comparison with 1913 :—

	lb.	Index Figure.
1913	9,114,134	100
1922	20,802,563	228
1923	33,100,719	363
1924	33,242,704	365
1925	32,693,402	359
1926	30,297,000	332
1927	39,551,756	434
1928	50,907,080	559
1929	55,785,032	612
1930	42,590,243	467

The following figures showed the export of dyestuffs and intermediates from Great Britain during the six years ended 1930, in comparison with 1913. Apart from the extraordinary increase in 1929, 1930 figures were the highest recorded. There was, however, still ample scope for development in the export of dyestuffs, as the British figures represented far too small a proportion of the world's export trade :—

Year.	Weight. Tons.	Value. £
1913	2,434	177,246
1925	5,208	847,639
1926	3,793	614,419
1927	3,892	658,464
1928	5,199	806,533
1929	7,844	984,222
1930	5,381	884,974

I.C.I. New Colours

He took this opportunity of congratulating Imperial Chemical Industries, Ltd., on the progress made particularly in the past few years, real progress in directions other than volume of business. During the period under survey, Imperial Chemical Industries had placed upon the market no fewer than 40 new colours for the textile trades. Many of these were of marked importance and represented products in great demand formerly imported from abroad in large quantities. A few were entirely novel. They included the first green of the "Naphthol" class, Duratol Green G, which is the only green of this series extant, and a new Naphthol, Duratol BA. Several highly important vat colours, not hitherto manufactured in this country, had also been added to their range. General improvements in this series include the introduction of "Fine Powder" qualities. New lines in colours for use in trades other than textiles had been developed, notable amongst these being the "Neran" water finishes for leather and the "Vulcatex" rubber dispersed colours for the rubber industry.

In the realm of dyestuffs for Cellulose Acetate Silk, a line in which British makers had always led, further strides had been made. The I.C.I. had introduced on the market the first satisfactory homogeneous green for dyeing this fibre, as well as a number of new colours, superior in shade and fastness or from the point of view of application, to those previously available. Moreover, definite progress could be recorded in improvements to existing types, prominent amongst these being the introduction in the more convenient form of fine powders of products hitherto only supplied as pastes. The production of Cellulose Acetate Silk colours was very much greater in 1930 than in 1929, and still showed satisfactory progress.

The research organisation of the leading British makers continued to develop, both in the evolution and manufacture of new products and in connection with problems concerning their application to textiles and other substances. A unique system of co-operation existed between the I.C.I. research department and the universities, and this must undoubtedly be of considerable value in the forward outlook of our great chemical industries.

As users, he had no hesitation in stating that the service and technical assistance now provided by the British makers was not excelled by that of foreign dyestuff manufacturers. The development of faster direct cotton colours for use on casements and similar types of cloth, where fastness to light was the first requirement, was a field which it would be well for the British makers to explore. Considerable progress had recently been made by foreign makers in this direction, and users would welcome the substitution for expensive vat dyestuffs of a type of dyestuff cheaper and less costly in application, to meet the growing demand for faster colours in the mass trade where the application and use of vat colours was too costly.

A Tribute to Foreign Makers

Despite the disabilities of the Dyestuffs Act, foreign makers had continued to furnish British users with that skill and service which had for so long been identified with them, and which was highly appreciated by the colour using industries. There had been no hesitation on their part to give of their best ; in fact, he thought the Act had stimulated their endeavour to exploit newer fields in the chemical and dyestuffs

world and thus contribute to general progress. Considerable assistance had also been afforded to British users by the introduction of many auxiliary products for facilitating the extended use of modern dyestuffs. A reduction, however, in the prices of imported colours and auxiliary products would be welcome, since it was well known that the index figure, not only in this country but abroad, for dyestuffs was well above the general wholesale commodity index figure.

Dyestuffs Licences

Six thousand applications had been dealt with during 1930, a reduction of 1,800 compared with the previous year. There had been a decrease of 283,794 lb., or 4·9 per cent., in the licences granted compared with 1929; nevertheless, with the exception of 1929, the licences granted were the highest recorded since 1921. In the depressed state of the textile industry it could not be said that this reduction was an abnormal one, particularly in comparison with the 23 per cent. drop in the British production. In measuring the imports of foreign dyewares there was distinct evidence of progressive methods on the part of the foreign manufacturers, not only in maintaining sales of specialities, but in extending the range. These foreign colours could only be imported after proof that they were not made in this country, price applications being almost negligible. A perusal of these figures by the leading British makers should afford ground for serious reflection.

Last year he suggested that the time had arrived for modification of the 1·75 times pre-war factor which guided the Committee when considering applications for licences to import dyestuffs on price grounds, and I am glad to state that, following the Government's announcement of the extension of the Dyestuffs Act in January last, the factor ratio over pre-war was abolished. Under the new arrangement the British makers agreed that licences should only be refused in those cases where British makers were prepared to supply equivalent products at similar prices to those quoted by foreign manufacturers, so long as such prices were not "dumping" prices. The Committee adopted this proposal, and it was arranged that in the case of applications based on price grounds licences should be issued if British makers did not indicate within 48 hours of being notified of the foreign quotations their willingness to supply at the same price.

He regretted to state, on the evidence of many members of the Association, that the offer of the British makers to meet foreign prices had been nullified by the fact that foreign producers refused to quote on these terms. After all, was it reasonable to expect a foreign competitor to furnish his lowest prices, knowing all the time that his quotation would be immediately placed before a competitor who would have the option of refusing or accepting the business at the same price? Their ability to obtain foreign quotations must be established, but he feared the existing procedure of the Licensing Committee precluded them from access to competitive prices for nearly 80 per cent. of British requirements.

The Future of the Act

Since his last address the Government had decided to extend the Act to December 31 next. The Colour Users accepted this decision loyally, and they had taken their part in helping to make the Act work smoothly. A Select Committee, in their report just issued, recommended "that the Dyestuffs Act should *not* be continued for a period longer than one year." He understood this to mean that should the Dyestuffs Act be continued by the next Expiring Laws Continuance Act, the continuance should not—unless the Government should at the appropriate time otherwise decide—be for more than one year; but it did not pre-judge the issue as to whether the Act should or should not be continued at all. Their Council had indicated that in their view the Act had entirely achieved its purpose, and therefore should have come to an end in January last. He hoped that, owing to the difficult and distressing times through which the textile industry was passing, it would be possible, after this year's extension, to arrive at unanimity of view between dyestuffs manufacturers and users that the Act should lapse at the end of the current year. The British dyestuffs industry, fully emerged from its infancy and now largely under the fostering care of one of the best managed and finest equipped organisations in the world, could be trusted to take care of itself and to make progress without any adventitious aid. In that event the British makers need have no fear that there would be an increased tendency on the part of the users to fly to other sources for their supplies. Where the British maker could offer satisfactory materials at competitive prices they would always be assured of wholehearted support.

Dr. Levinstein's Views Challenged

Mr. C. W. Wade said he trusted they would not have to go again through the horrible turmoil of six months ago, and expressed a hope that if there were the same manœuvring all colour users would make a united stand against any further extension of the Dyestuffs Act. Referring to a speech made by Dr. Herbert Levinstein in London on Wednesday, Mr. Wade said that Dr. Levinstein's remark that he could see no marked inclination on the part of British consumers to give preference to British-made products when prices and qualities were equal was very unfair. So long as compulsion was used it was not likely that users would show that inclination. Compulsion and voluntary action seldom went well together.

Mr. T. Parker Smith said he, also, felt that colour users had supported the Dyestuffs Act loyally.

The chairman said that, knowing all that colour users had done for the dye-making industry, he regretted that anybody of the standing of Dr. Levinstein should have made such a statement. As representing one of the largest dye-using firms in Great Britain he emphatically refuted it. On the contrary, consumers had made great sacrifices to promote the establishment of the British dye industry.

Mr. Forrest Hewit said he particularly welcomed the chairman's definite association of himself with the rest of the Council in demanding the repeal of the Dyestuffs Act at the end of the present year, and he trusted that this would now be secured.

Acetate Products Corporation, Ltd.

Liquidation Approved

THE second annual general meeting of the Acetate Products Corporation, Ltd., was held on Monday last, July 20. Mr. William Thomas Harvey (chairman and managing director), who presided, said that in the continued hope of getting the case against Mr. Morris Greenhill decided and finding additional working capital, the board had postponed the holding of the meeting and the presentation of the balance sheet, in the expectation of being able to present a much better and more favourable statement to the shareholders. The claim against Mr. Greenhill was for £50,000, but unfortunately they had not got that money.

Shareholder's Question

In the course of the discussion which ensued, Mr. Shaerf said that the corporation was formed in 1928 to take over an established business—not to exploit a new invention. It was not until a few weeks ago that the company had got into commercial production, and he therefore wanted to know what the sum of £242,000 had been paid for. If the money had not been paid for a process, then it must have been paid for assets, and he could not understand why they could not raise anything on assets for which they paid £242,000.

The Chairman said that the corporation was formed to extend existing factories for the purpose of manufacturing non-inflammable safety celluloid. It was found impossible to extend the existing factories to produce four tons a day, and the only alternative was to build a new factory, which had been done. The corporation had to buy its basic raw material, and that had been the cause of the trouble. The £242,000 was paid for assets at Richmond, Slough and Leytonstone, and the goodwill of the business associated with them.

The report and accounts were adopted. At a subsequent extraordinary general meeting a resolution for the voluntary liquidation of the company was carried by 314,015 votes against 103,786. Sir William Peat was appointed liquidator, and it was decided to recommend that a committee of shareholders should act with him in an advisory capacity.

India Rubber Works Closes Down

THE directors of the India Rubber, Gutta Percha, and Telegraph Works Co., at Silvertown, London, announce the closing of their Burton works and the transference of the work and equipment to Silvertown. Some hundreds of people will be affected by the decision, as these works have employed 450 hands.

Chemical Trade Conditions in British Malaya

Importance of Rubber and Tin Industries

We give below extracts from an official report on Economic Conditions in British Malaya which has been recently issued by the Department of Overseas Trade (H.M. Stationery Office, price 2s. 2d. post free).

In this report Mr. R. Boulter, who now occupies the recently created post of H.M. Trade Commissioner stationed at Singapore, stresses the importance which rubber and tin exercise in the economic conditions of Malaya and deals at length with these industries. He indicates the repercussions of world, and particularly American, depression on the finance and commercial conditions prevailing in his area, and admits that for the time being the prospects of increasing British trade are not encouraging. Trade conditions have been discouraging throughout 1930, and the decline in monthly imports has been particularly noticeable since August. The report includes a general survey of the openings for British trade indicating the classes of chief consumers and describing the channels of trade and the methods of representation. As in other reports issued by the Department, stress is laid on the necessity for close co-operation between manufacturers and their agents. Detailed notes are also given of the imports of manufactured goods indicating the extent of the trade and the supplying countries, with chapters relating to labour, immigration, transport facilities and public works.

The concentration of capital and energy in Malaya upon the production of rubber and tin has made the economic prosperity of the country dependent upon the state of the industries in Europe and America which consume these two materials. In the past the cultivation of various agricultural products which might have been developed to adjust the balance has been neglected or sacrificed to the alluring returns from rubber. Wide fluctuations in price have made the past history of the country one of alternating periods of prosperity and the reverse. The existing depression in the world's manufacturing industries has lessened the demand for both rubber and tin. The extension of this depression to America in the autumn of 1929 has been of exceptionally grave importance to Malaya, since the former country consumes more than half her production of both articles. To make things worse, the world-wide fall in price of primary products has affected the less important commodities, such as copra and palm oil, to which greater attention has been turned in recent years.

Features of the Malayan Market

The principal outlets for British goods are to be found in machinery and supplies for tin mines, for rubber estates, and factories for the preparation of crude rubber from latex, and for minor agricultural and mining industries, pineapple canneries, printing works, aerated water factories, biscuit factories, brickworks, etc.

Mines and estates, especially the latter, are in many cases not direct purchasers of the supplies they consume. Their requirements are ordered by their agents who, in the case of rubber estates, are often merchant firms. Public authorities, such as departments of Government controlling certain public utility services, and municipalities, order largely through agents in the United Kingdom. In many cases it is evident that the quality of British goods is often too high for the Asiatic purchaser. With only a small sum to spend on necessities, a difference of a few cents may be a deciding factor. British manufacturers who have spent years in raising their products to a high standard of quality should therefore consider manufacturing grades of goods more suitable to Asiatic requirements, as their competitors in Japan, Germany and Czechoslovakia are supplying articles to meet these requirements. British manufacturers would be unwise to rely much upon the fact that their products are British. Though there is probably a predilection for British goods, it is not strong enough to counteract any considerable difference in price.

Evidence is not lacking of the keen competition to be encountered in this market from foreign manufacturers. The Japanese are increasing their imports of cement. Belgium supplies large quantities of steel bars. Czechoslovakia is making a strong bid to capture the trade in leather. In studying the returns of Malayan trade it should be borne in mind that the purchasing departments of Government give preference to British goods. The municipalities also order much of their purchases through their home agents in London. There is thus a large volume of trade which is more or less reserved for the British manufacturer. Under these circumstances it is difficult in many lines to ascertain how far he is holding his own in competition in the open market. It is very important to keep representatives in Malaya well supplied with catalogues and other publicity material. Many importers state that they are inundated with such matter from foreign manufacturers, while British manufacturers do not supply them with sufficient material to circulate among potential consumers. In many cases catalogues are valueless without an indication of price. What the importer requires is a c.i.f. price so that he may know exactly what goods will cost him at the port of discharge. A more generous supply of samples is needed, and they must be attractively presented. Where machinery of a new type is supplied detailed working instructions should always be forwarded.

Imports of Manufactured Goods

Cement.—Imports during 1929 were 288,260 tons, valued at $7,865,122; in 1930 228,936 tons, valued at $5,408,391. The chief sources of supply were United Kingdom, 75,236 tons; Japan, 71,429 tons; and the continent of Europe—principally Denmark—63,854 tons. Imports from Japan have recovered from their setback to 37,185 tons in 1929, while those from the Continent have declined by over 50 per cent. There is a distinct price advantage in favour of Japanese cement which is helped by low freight charges. Imports from Hongkong have risen from 8,443 tons in 1929 to 13,543 tons in 1930, and the extension of plant in the works there is likely to promote a further increase.

Chemicals, Drugs, Dyes and Colours.—The largest items in this group are opium and other raw drugs and medicines, which in 1930 accounted for 7·4 million dollars out of a total for the group of $15,693,831. Of other items, acetic acid ($264,750) and formic acid ($630,572) came principally from the continent of Europe. Out of total imports of disinfectants valued at $167,140 the United Kingdom supplied goods to the value of $159,180. Soda and sodium compounds $335,990) were also principally from the United Kingdom. Proprietary medicines were valued at $1,871,580, of which $541,210 were from Great Britain and $402,070 from British possessions. The principal dyestuff imported was cutch, $960,014, practically all from Brunei and Sarawak. Paints and colours totalled 67,174 cwts., $1,500,386, of which 50,658 cwt., $1,211,350, were from the United Kingdom. Practically the entire imports of wood preservatives, 61,568 gallons, $95,300, were also supplied by the United Kingdom.

Lubricating Oils.—In 1929 imports amounted to 6,093,996 gals., valued at $5,186,448; in 1930 4,083,634 gals. valued at $3,711,114. Imports were principally from America, 1,546,867 gals.; Dutch Borneo, 1,224,241 gals.; and Sumatra 931,568 gals. From the United Kingdom 271,446 gals. were received. There was a general decline in the quantities arriving from each of these sources of supply, except in the case of Sumatra, imports from there having been only 409,171 gals. in 1929. 941,212 gals. were re-exported, of which 358,361 gals. were shipped to Siam.

Motor Spirit.—In 1929 imports amounted to 280,425 tons, valued at $53,936,681; in 1930 546,771 tons, valued at 103,304,145. Of this greatly increased import 430,803 tons were supplied by Sumatra, 65,229 tons by Dutch Borneo, and 38,338 tons by Sarawak. About four-fifths of the imports were re-exported. So far as kerosene and motor spirit are concerned, Malaya, or rather Singapore, acts as a distributing centre for a wide area, which includes Japan, Australia, India and South Africa, motor spirit going even to Italy and Egypt. Greater proportions of the imports of lubricating oil and liquid fuel are consumed in the country. There is a wide use of oil engines in the rubber factories and tin mines. They are also used in a large number of towns for the generation of current to be sold for power and lighting purposes.

Turpentine.—The principal source of imports in previous years has been Dutch Borneo, and presumably 1930 imports

(897,809 gallons, valued at $1,381,717) came largely from the same source. Re-exports have increased from 94,725 gallons in 1929 to 533,612 gallons in 1930, Australia being the destination of a very large proportion.

Future of the Rubber Industry

It is difficult to take an optimistic view of the future prospects of this industry, because no development is in sight which would bring demand up to the level of potential supply. World consumption in 1931 is estimated at a higher figure than in 1930. Any improvement in world economic conditions will be reflected in a larger demand for rubber. Some help may be forthcoming from increasing use of motor vehicles in various countries. The progress of road construction in China is a promising instance. Rubber roads are a possibility at some future time, but years of research and trial may still be required before they become a practical proposition. A recent experiment in Singapore in the use of a road surfacing material composed of latex and clay has aroused much interest. It is a feature of most finished rubber products that their price bears little relation to the cost of the crude rubber used in making them. Other materials required and the cost of processing rubber are much more expensive items.

Vegetable Oil Industry

A census of the coconut areas in Malaya was undertaken in 1930, and showed that the total area under this crop amounted to approximately 600,000 acres. Local consumption, coconut oil exports, exports of fresh nuts and immature areas are represented by about 200,000 acres, leaving approximately 400,000 acres to produce the Malayan export of copra. That copra is an article of importance in the export and entrepôt trade is shown by the following tables of imposts and exports :—

Year.	Imports. Tons.	$	Exports. Tons.	$
1927	56,538	10,040,102	143,042	26,578,487
1928	87,230	15,496,114	182,858	34,105,425
1929	86,209	13,261,998	198,638	32,924,620
1930	89,374	10,907,615	191,704	26,242,564

The cultivation of the oil palm on a commercial scale in Malaya dates from 1917. By the middle of 1930 the total area planted was 44,586 acres, situated principally in the States of Selangor, Johore and Perak. The area already alienated for the cultivation of this tree is approximately 94,000 acres. A further 30,000 acres have been earmarked by Government for planting, but not yet alienated, and it is not known how much of this area contains suitable soils. Thirteen factories for the extraction of oil were working by the end of 1930. The annual production of palm oil and kernels is shown below :—

Year.	Palm oil. Tons.	Palm kernels. Tons.
1927	915	185
1928	1,345	286
1929	1,819	311
1930 (estimated)	3,100	620

Production may be expected to increase still more rapidly in future, as large areas are about to come into bearing, while much of the area already bearing has not yet reached the state of maximum production.

Future Prospects of Tin Mining Industry

While Malays claims to be the world's cheapest producer, and recent developments in the designs of dredges have enhanced her position in this respect, there are under present conditions only a few mining enterprises working upon rich deposits and possessing the advantage of conservative finance in the past which can provide any return upon capital after providing for amortisation. Many of the Chinese gravel pump and hydraulicing concerns have handed over the working of their deposits to their labour forces. The latter are able to earn only enough to pay the cost of their food and bare necessities, and are producing as much ore as possible. In the case of rubber, continued tapping exhausts the bark of the tree, but it grows again, and the ultimate life of the tree is still an unknown quantity. Tin, however, is a wasting asset ; once the ore is taken from the ground there is no natural process of replacement. Thus one of the richest assets of the Federated Malay States, and a very important source of State revenue, is being dissipated at little profit to anyone.

As regards consumption, the principal industries using tin are the tinplate and engineering industries, especially the motor car section of the latter. Failing any arrangement for regulating output, the Malayan mining industry must therefore look for its salvation to general improvement in economic conditions, particularly in the United States. Exports of tin, in block, ingot, bar and slab form, are set out below :—

Year.	Quantity. Tons.	Value. Million $.
1927	83,773	206·6
1928	99,053	191·3
1929	102,026	182·1
1930	97,214	123·8

Christmas Island is the chief producing centre for phosphates of lime, and exports practically its entire output to Japan. Exports were 106,000 tons in 1927, 112,000 tons in 1928, and 118,000 tons in 1929. There are also deposits of phosphatic guano in the States of Perlis and Kedah.

Chemical Developments in S. Africa

[From a Correspondent.]

A company has just been formed at Stellenbosch, for the purpose of utilising the low-grade South African fruit (most of which is wasted) for conversion into various by-products. Registered under the Co-operative Act, the company will only serve the share-holding members. Thus before farmers can send in their waste fruit for conversion into oil, pulp, juice or sugar they must become registered stock-holders. The initial membership of the company was 500, and the capital £50,000. One-fifth of this is to be devoted to buildings ; £8,000 to plant ; and £2,000 to packing materials. The remaining sum is to be devoted to working expenses and to the purchase of fruit. If preparations proceed at the present rate, the factory should be in working order by October. As England imports at least £1,000,000 of fruit pulp annually, South African farmers are beginning to feel that they should be able to enter this market, and they are also encouraged by the fact that factories of this sort reduce the amount of wastage in orchards. If this company proves the success its promoters are sure it will be, similar undertakings will probably be floated in other parts of the Union.

Production of Oil from Coal

The production of petrol and oil from coal and coal products has recently been claiming wide attention in South Africa, and towards the end of June a company known as the Transvaal Oil and Petrol Industries was registered in Pretoria with a nominal capital of £300,000. Petrol is to be extracted from South African coal by a process invented by Mr. Wilhelm Mauss, of Johannesburg. Under the agreement between Mr. Mauss and Industrial and Mining Developments (Pty.), Ltd., who bought his formula, he is to be employed by the new company as technical adviser and consulting engineer at a salary of £1,800 a year. He is to receive in addition a royalty of one-halfpenny on every ton of coal, shale or torbanite mined for the purpose of petrol or oil extraction. Options have been secured for mining and prospecting in the Ermelo district, the situation of the main plant, and for this and the formula the sum of £120,000 has already been paid. The experimental pilot plant erected in Johannesburg has been acquired by the company and will probably be transferred to their main works.

Production of Alcohol from Molasses

In connection with South Africa's preoccupation with the production of local supplies of petrol, it is interesting to note that cane growers and wine farmers in most parts of the Union hold that they can produce enough alcohol to manufacture solutions of ten per cent. alcohol and 90 per cent. petrol to serve all the needs of the country. This fuel is claimed to be superior to the imported petrol. One large sugar factory in Natal has already installed the new Richard Allenet process, and after a study of this and other features of the industry, the chief technologist of the South African Sugar Cane Growers' Association has announced that from 16,000,000 gallons of molasses up to 5,600,000 gallons of pure absolute alcohol could be produced. Large quantities of molasses are rejected annually by the sugar factories as waste, to remove which large sums have often to be paid. If this waste matter can profitably be converted into alcohol and other products,

as claimed, the sugar industry will be relieved of one of its greatest anxieties.

For about ten years back an economic motor fuel has been manufactured from local products in Natal, and during a petrol famine, a Natal manufacturer drove his American car for over 40,000 miles using this fuel. The spirit is made from molasses, which are brought to the factory by rail tanks containing from 4,000 to 5,000 gallons, where it gravitates into storage reservoirs, each with a capacity of 250,000 gallons. From here the material is pumped to the supply tank under the roof of the main factory and runs into wash-mixing vats, where water is thoroughly mixed with the molasses by means of compressed air. A small quantity of a special yeast is then brought into contact with the mixture and at the end of 40 hours the fermentation which is set up is sufficiently advanced for the alcohol liquor to be run into the stills. The yeast used at this factory is obtained direct from the Pasteur Institute, Paris.

Ingredients of South African Motor Spirit

In the still room the equipment is sterilized with chloride of lime to kill injurious ferments. The fermented wash containing from 6 to 8 per cent. alcohol is pumped into supply tanks, and thence through a regulating cock to the wash heater. In the analysing column, which it enters next, the alcohol is then removed, leaving at the bottom, "dunder," or refuse, which is free of alcohol. The alcohol has to pass through the rectifying column, where the unwanted substances still remaining are removed. From here, the pure alcohol is pumped by compressed air to the mixing room for conversion into motor spirit, the proportions observed being 60 per cent. alcohol to 40 per cent. ether. Excise regulations demand the addition of 4 per cent. benzol, 2 per cent. wood naphtha, 0·5 per cent. pyridine, a small quantity of ammonia gas being ultimately blown through the mixture.

Chemical and Wood Industries, Ltd.

Capital to be Returned to Shareholders

In the Chancery Division on Monday, Mr. Justice Maugham confirmed a reduction of the capital of Chemical and Wood Industries, Ltd., from £1,000,000 to £347,674 19s.

Mr. Grant, K.C., for the company, stated that it was proposed to effect the reduction partly by the return of capital and partly by cancelling capital unrepresented by available assets. The company was formed to carry on the business of wood pulp manufacturers and had intended to carry on or form a subsidiary company to carry on the manufacture of artificial silk, but owing to the slump it did not now propose to continue the latter part of its activities. The result was that it had a large sum of money in hand and intended to return 11s. 3d. per share to the shareholders reducing the nominal value of the shares to 8s. 9d. It was also proposed to further reduce the shares to 7s. by cancelling 1s. 9d. per share capital unrepresented by available assets in respect of the expenses of the issue.

There was no opposition.

Industrial Disease Statistics

Statistics concerning the number of cases of industrial diseases reported to the Home Office during 1930 have now been completed and summarised in the *Ministry of Labour Gazette* for July. The total number of cases of chronic ulceration is given as 95, grouped as due to manufacture of bichromates (6), dyeing and finishing (15), chrome tanning (5), chromium plating (57), and other industries (12). There were 3 cases of mercurial poisoning, 1 case of arsenical poisoning, and 24 cases of aniline poisoning. No cases were reported for phosphorus, carbon bisulphide or chronic benzene poisoning. Lead poisoning accounted for a total of 265 cases, 57 of which (including 1 death) were due to the smelting of metals; lead poisoning at white and red lead works totalled 3 cases (including 1 death). Cases of epitheliomatous ulceration, or skin cancer, due to pitch and tar, totalled 97 (including 10 deaths), as compared with 87 cases (15 deaths) in 1929.

Exports of Copper Sulphate to Brazil

The quantity of copper sulphate imported into Brazil during 1929 were 1,334 metric tons, compared with 1,665 tons in 1928, and 730 in 1927. For the first five months of 1930 the imports of this commodity were only 139 tons. During 1929, Great Britain supplied 1,101 tons, Germany 104 tons, and the Netherlands and Belgium 67 and 57 tons respectively.

Indian Chemical Notes

(From Our Indian Correspondent.)

Investigations in Bengal

The Industrial Chemical Department of Bengal is concentrating its research work on the unexploited products of the indigenous oil seeds with regard to their industrial applications. The country has vast natural resources in the shape of various vegetable origin which await development. The investigation on the oil seeds was primarily occasioned by the needs of the soap industry of the province. Further, kerosine oil has thrown out of use many vegetable oils formerly won for burning purposes from the products of natural trees. If some other use for such oils could be indicated, these trees would be preserved and at the same time provide a considerable amount of employment. A large number of seeds of various kinds which are grown in the province have been investigated and their value established.

Hyderabad Leather Industry

A survey of the leather and hide industry in the Hyderabad State has recently been carried out, and Capt. Guthrie, in his report, states that there is no leather suitable to make equipment tanned or dressed in the State. He, however, takes a more optimistic view of the prospects for the manufacture of footwear, the demand for which is increasing. As regards tanneries, he observes that chrome tanneries in India have a much greater capacity than there was a demand for, and that therefore the starting of fresh tanneries in the State was foredoomed to failure. At the same time, there is a definite opening for a local "export" tanner to develop as a side line, the tannage of a cheap quality of sole leather, either by retaining Dhori hides, by a combination of the Dhor and laying away method, or by an ordinary bark and extract tannage.

Paper from Cotton-Seed Fibre

The survey of the oil industry in the Hyderabad State has brought to light a new raw material from which paper can be manufactured, and this is cotton-seed fibre. According to the results of experiments conducted with a specially constructed de-fibrating machine, it has been found that the amount of crude but unsaleable fibre obtained from cotton seed is very considerable. The treatment recommended by the paper expert of the Nizam's State includes digestion of the non-cellulosic materials contained in the crude fibre by means of caustic soda under steam pressure, followed by bleaching with bleaching powder or electrolytic chlorine. The percentages of caustic soda and bleaching powder which have been found necessary to use in order to get a white paper, do not appear to be at all excessive, as they amount to $7\frac{1}{2}$ per cent. of caustic soda and $9\frac{1}{2}$ per cent. of bleaching powder, calculated on the original weight of crude fibre. Calculations have also been made to show that the manufacture of paper would be economically successful at present prices.

Research in Vitamins

The researches that have been carried out in recent years on vitamins, especially the synthesis of vitamin D, by irradiating ergosterol with ultra-violet rays, have contributed to an increased number of applications concerning food preparations that would compensate for nutritional differences. The inventions were concerned with the preparation or the partial purification of vitamin extracts, by treating foodstuffs with organic solvents containing stabilising agents and concentrating the extracts by using activated carbon for selectively absorbing the vitamins.

St. Dunstan's Parish Registers

At Bouverie House, Fleet Street, on Wednesday evening there was a very large response to Sir Ernest Benn's invitation to the public to inspect the registers of the parish of St. Dunstan's-in-the-West, which had been repaired by Record Office experts, and had been rebound in appropriate leather covers at the cost of Sir Ernest Benn. These interesting documents go back well into the sixteenth century. The varied and beautiful styles of handwriting, the quaint entries, and the names and occupations of the people appearing in the records have a rare interest for the antiquary, and for about two hours a stream of visitors continued the inspection of these historic volumes. The guests were received by Sir Ernest Benn and the Rector (Dr. A. J. Macdonald), and tea was served in directors' rooms.

Chemical Research Laboratory

New Work at Teddington

THE Chemical Research Laboratory of the Department of Scientific and Industrial Research, at Teddington, was inspected on July 16 by members of the Society of Chemical Industry, and the various researches now in progress were fully explained to the large company by Professor G. T Morgan, F.R.S., the director. Professor Morgan remarked that his staff now numbers about sixty—a fact which indicates the volume of work being carried on. The staff of the National Physical Laboratory, with its many buildings and departments, is only some ten times greater than that of its chemical sister close by.

Corrosion Problems

A research which has recently yielded successful results is that into the atmospheric corrosion of copper. The green patina formed on copper domes and similar structures was formerly thought to be composed chiefly of basic copper carbonate, but investigations of patinas formed on exposed copper structures in several parts of the country have shown this theory to be incorrect. It has been found that the chief constituent is usually basic copper sulphate, except where the patina is the product of a purely marine atmosphere, when the predominating constituent is basic copper chloride. The basic chloride is, however, only formed on a large scale when the copper structure is located in a seaside place of quite small size. In such a town, for example, as Brighton basic sulphate is far more in evidence than either basic chloride or basic carbonate. The patina formed on the roof of the Bodleian Library at Oxford was found to have 76 per cent. of basic sulphate in its composition, and other examples show that the patinas produced in manufacturing towns contain a still larger percentage.

It is somewhat amusing to find that a desirable effect of smoke has at last been discovered in the production of the patina, which is so often counted on by architects for the completion of their artistic schemes. The chemists at Teddington have, however, now found a method of producing a patina artificially within about nine months, so architects will no longer have to wait fifteen or twenty years to see the full fruition of their handiwork.

After noticing the emphasis placed on corrosion problems at the Chemical Plant Exhibition, it was interesting to find a number of researches on the corrosion of metals to be proceeding at Teddington. One of these is an investigation into corrosion of magnesium by intermittent contact with sea-water, a research which, if successful, may have an important practical result in enabling magnesium alloys to be readily used in the construction of hydroplanes. As magnesium is 40 per cent. lighter than aluminium its value for aeroplane or seaplane construction is obviously great. Several hundred different kinds of protective coating for magnesium alloys have been evolved chemically and tested by systematic spraying with sea-water over periods of weeks or months. A few of these coatings show promise and are being further investigated, and lately it has been found that a coating of selenium is one of the best methods of protection that at present seems possible. The magnesium is dipped in a selenium solution and the coated product has been found to be forty times more resistant to corrosion than the untreated metal.

Corrosion of Immersed Metals

One of the most elaborate researches being conducted at Teddington is concerned with the corrosion of immersed metals—in particular of immersed steel. The apparatus employed consists essentially of a tank provided with a remarkably complete system of thermostats for keeping the distilled water at a constant temperature of 25° C. over any period of time. The greatest permissible range of temperature change is of the order of 1/100 of a degree, and the lighting, by the thermostats, of one or more of a series of carbon-filament electric bulbs mounted just above the surface of the water corrects small drops in temperature. Oxygen passes through the solution by means of convection currents due to density changes produced by differences of oxygen concentration. The velocity of the convection currents varies as the difference in density between the solution saturated with oxygen at the surface of the liquid and the solution next to the metal, and changes in concentration of oxygen are produced by the process of corrosion. A continuous corrosion time-curve is being plotted from measurements of the gases absorbed and liberated.

Further investigations of the corrosion of immersed metals are being made microscopically, with the aid of a special apparatus, and many arresting exhibits, showing the localisation of corrosion in a neutral solution, have been obtained. It is hoped that a complete theory of the subject will in time be worked out.

Research into water pollution is being conducted as the result of requests made by the Ministry of Health and the Ministry of Agriculture and Fisheries. The various practical problems connected with the use of treated minerals or of synthetic products as base-exchange materials for water softening are being explored theoretically, and it has appeared from the researches that with treated materials the exchange of bases is confined to the outer surface of the particles, whilst with the synthetic materials diffusion to the inner surfaces becomes a significant factor.

Other work being conducted at the Laboratory includes an extensive examination of the properties and possibilities of "low temperature tar" (previously referred to in these columns) and researches into atmospheric pollution. A notable feature of the Laboratory is its high pressure chemical engineering department, of which—with its battery of high-pressure autoclaves and its high-pressure catalytic "flow-through" system—the Department may be justly proud, especially as the plant is made and maintained in the Laboratory's own workshops on the premises.

Visit to the B.D.H. Works

Manufacture of Biological Products

THE jubilee celebrations of the Society of Chemical Industry included a visit to the works of the British Drug Houses, Ltd., which took place on the afternoon of Wednesday, July 15. The visitors, numbering about 100, included many academic chemists, public analysts, industrial chemists and research workers, as well as several distinguished visitors, among whom was Professor S. P. L. Sorensen, of Copenhagen. They were divided into three parties, each of which made the tour of the works according to a printed programme.

The tour occupied more than two hours, and the keenest interest was displayed by the visitors in the various departments and the manufacturing processes demonstrated to them. The Wharf Road chemical works afforded an opportunity of seeing in concrete form the application of the latest scientific researches to industrial production, as shown by the manufacture of biological products, including vitamin products and insulin, in connection with which the physiological laboratory and the animal house are interesting features. Here were seen, also, the manufacture of various synthetic chemicals for medicinal use, pure analytical reagents, research chemicals, and microscopic stains and indicators; as well as the large-scale production of inorganic products used in medicine, such as magnesium sulphate and sodium sulphate.

The tour of the Graham Street works included an inspection of the manufacture of pharmaceutical extracts, tinctures, ointments, and emulsions; departments devoted to the manufacture and filling of sterile solutions; and the making of compressed tablets; also interesting examples of mechanical transportation in connection with the warehouse and despatch departments, and the latest installation of labour-saving equipment, including a bottle-washing machine.

At the conclusion of the tour the visitors were entertained to tea, after which Dr. J. T. Dunn proposed a cordial vote of thanks to the company, remarking that he had been greatly impressed by the enormous complexity of the work and the organisation necessary successfully to carry out the manufacture of such a diversity of scientific products. The vote was carried with acclamation, and briefly acknowledged by Mr. C. A. Gill (chairman and managing director).

British Pharmaceutical Conference

THE 68th annual meeting of the British Pharmaceutical Conference was opened at Manchester on Tuesday, July 21, in connection with the Pharmaceutical Society of Great Britain. About four hundred delegates received a civic welcome from the Lord Mayor (Alderman G. F. Titt) at the Albert Hall.

The Distillers Co., Ltd.

Advantages from Acquisition of United Molasses Co.

THE fifty-fourth annual general meeting of the Distillers Co., Ltd., was held at the North British Station Hotel, Edinburgh, on Wednesday, July 15, when Mr. William H. Ross, chairman of the company, presided.

Referring to the United Molasses deal, the chairman said that some criticism has been levelled at the action of the directors in acquiring a large block of shares in the United Molasses Co., which since the date of that purchase has depreciated so much in value. They had, however, made extensive experiments in the production of an alcohol fuel and proved that it was a marketable commodity, but their main difficulty from the start was in satisfying themselves that there was sufficient suitable raw materials from which this fuel could be produced even if the demand should come to one-half of what was predicted. The cheapest form of material for this purpose was undoubtedly molasses, but the supply of same was definitely restricted to the production of sugar and to the facilities provided for the collection of the molasses from the sugar works.

The Need for Supplies of Molasses

Feeling that even at best the supply of molasses might be precarious on which to build a large trade in industrial alcohol, the Distillers Co. sent various delegations to different parts of the world to discover if possible a substitute from which cheap alcohol might be produced. These investigations extended over several years, but unfortunately were unsuccessful. In the interval the United Molasses Co. had been formed, and by a vigorous and forward policy they had established depots in various parts of the world where molasses could be collected with advantage, and about the same time America became a more important buying competitor and threatened to appropriate the world's supplies of molasses. Even for their own industrial alcohol trade it was felt, therefore, that something must be done to insure their source of supply of raw materials, and in the summer of 1929 Mr. Kielberg, chairman of the United Molasses Co. was approached with a proposal that a closer affiliation of the two companies might be of mutual advantage. These approaches were received in a friendly way, but Mr. Kielberg asked that further negotiations should be postponed for a year as certain additional businesses had been acquired by his company in the United States, the profits upon which would not be apparent until the end of his next financial year. So it came about that the negotiations were resumed in July-August of 1930, when the balance sheets of the respective companies were placed in the hands of the auditors for examination, and as a result of this investigation the parties concerned came to an agreement.

Solvent Products, Ltd.—An Important Investment

In connection with the investment in Solvent Products, Ltd., the chairman said this concern had come into existence a few years earlier and had affected their profits in industrial spirits considerably. The United Molasses Co. were offered and accepted the opportunity of acquiring the whole shares in that company, and at once came to the Distillers Co. with the offer that they should take over 50 per cent. of the purchase at cost price. This the Distillers Co. agreed to do, and thereby converted an active belligerent into a faithful ally in the industrial spirit trade.

The resolution moving the adoption of the report, which recommended the payment of the usual dividend on the preference shares, and for a final dividend on the ordinary shares of 12½ per cent., less tax, which, with the interim already paid, makes a total dividend for the year of 20 per cent., less tax, leaving a sum of £283,151 to carry forward to the current year, was unanimously adopted.

Alkali in France

THE principal French producers of alkali, Solvay, Saint Gobain and Marcheville-Dagiun and Cie., are reported to have a capacity of 570,000 tons annually. French imports of sodium products are negligible, and the export trade in the principal items of this category were as follows :—

	1929	1930	
Caustic soda	37,310	36,205	metric tons
Sodium carbonate (crude) ..	42,628	19,175	,, ,,
Sodium carbonate (refined)	130,540	129,220	,, ,,

Coal Sampling and Analysis

Standard Specifications for Inland Trade

THE work of the preparation of British standard specifications for the sampling and analysis of coal and coke, which was begun in 1927 at the instance of the Department of Scientific and Industrial Research, has been brought a stage nearer completion by the recent issue of a British Standard Specification for the Sampling and Analysis of Coal for Inland Purposes (B.S.S. No. 420–1931). This specification should be read in conjunction with the Report by Dr. E. S. Grumell and Dr. A. C. Dunningham on the sampling of small fuel up to 3 in. (B.S.S. No. 403) issued in December, 1930, as this report embodies some general principles of sampling.

The sampling section of this specification is at present confined to coal passing through a 3 in. diameter perforated plate screen. The sizes of gross sample required are graded in accordance with the average ash percentage and the size of the fuel, and figures have been specified such that a gross sample taken in accordance with the specification should contain an ash percentage within ± one unit of the average ash content of the consignment. Full particulars are given of the method of collection of the gross sample from chutes, conveyors and wagons, and the method of reduction is closely specified. As in the case of the Export Specification, the methods of analysis are simple, practical ones used in sound, commercial practice at the present time. Methods are included dealing with the determination of moisture, volatile matter, ash, calorific value, sulphur and arsenic, and in most cases alternative methods have been put forward.

Further Specifications in Progress

The question of the sampling of large screened coal and run-of-mine coal is still under consideration and a comprehensive series of tests has been carried out by collieries, power stations, gas companies, railways, and others throughout the country, which has already gone a long way towards ensuring a satisfactory solution to this very difficult problem. At the present time a tentative specification has been prepared and it is proposed to carry out a further series of tests in order to confirm the proposed weights of gross sample. A method has also been prepared for the determination of the fusion temperature of coal ash, and it is hoped to issue this early in the autumn. Committees are also still at work dealing with the question of the preparation of a British standard method for the determination of the agglutinating value of coal, and for the sampling and analysis of coke.

Copies of Specification No. 420–1931 can be obtained from the British Engineering Standards Association, Publications Department, 28, Victoria Street, London, S.W.1, price 2s. 2d., post free. The specification for the Sampling and Analysis of Coal for Export Purposes, which was issued in December, 1930, is now available in the form of German and French translations which are finding a ready sale in countries to which British coal is exported.

Irish Ochre Deposits

IN the Dublin Court of Justice on Tuesday, July 22, Mr. Justice Meredith made an order in the terms of the plaintiffs' statement of claim in an action in which the Irish Ochre and Minerals Co. (1915), Ltd., were the plaintiffs, and the Wicklow Ochre and Minerals Grinding Co., Ltd., were the defendants.

The statement of claim set out that defendants ceased to work the ochre deposits in County Wicklow on the terms of their lease and had removed such machinery as was permitted by the covenant of the lease. In September 1930 plaintiffs served defendants with a notice to remedy the breach of covenant which it was alleged had been committed by the stoppage of work on the deposits. Defendants did not comply with the notice. Plaintiffs asked the Court for possession of the premises, a declaration that the lands are effectually revested in them and that all licences granted by the lease had been duly determined. As stated above, the order was given.

Beit Fellowship Trust

AT the annual meeting of the trustees of the Beit Fellowships for scientific research, tenable at the Imperial College, South Kensington, Sir Campbell Stuart was appointed chairman of the trust and Sir Alfred Beit a trustee, both in succession to the founder of the fellowships, the late Sir Otto Beit.

Chemical Industry Lawn Tennis Tournament

Semi-final Draw and Third Round Results

AFTER a series of most interesting matches the Chemical Industry Lawn Tennis Tournament, organised by THE CHEMICAL AGE, has now reached the semi-final stage. The four teams that will contest their right to appear in the final are the following :—

H. Anning and
T. Baxter (British Industrial Solvents, Ltd., London. 'Phone : Clerkenwell 2364.)
v.
S. Newman and
E. J. Lawrence ("The Industrial Chemist," 33, Tothill Street, London, S.W.1. 'Phone : Victoria 8836).

S. Perridge and
W. L. Alldis (Chemicals and Coke Ovens, Vintry House, Queen Street Place, London, E.C.4. 'Phone : Central 1411).
v.
S. B. Gane and
D. E. Raine (Johnson Matthey and Co., Ltd., 71/73, Victoria Street, Birmingham. 'Phone : Birmingham Central 6726/7).

In accordance with the Rules, players must make their own arrangements for playing off their matches on a ground mutually agreed upon. In the event of disagreement the first name drawn shall have the right to choose the ground. Competitors should note that all games in the semi-finals must be played off by **August 24** and the results, signed by the losers and the winners, forwarded to THE CHEMICAL AGE not later than Tuesday, August 25.

The arrangements for playing off the final are not yet complete, but early intimation will be given of the date and place.

Third Round Results

The results of the matches played in the third round are given below :—

H. Anning and T. Baxter won by 6—0, 6—2 against G. Stanford and J. Shirreff.

S. Newman and E. J. Lawrence won 6—4, 6—3 against W. Speakman and S. E. Chaloner.

S. B. Gane and D. E. Raine won 7—5, 6—0 against J. W. Urban and F. S. Mortimer.

W. L. Alldis and S. Perridge won 6—4, 6—1 against W. Tracey and D. G. Blow.

Low Temperature Carbonisation

A Recent Test on the Bussey Retort

THE results of a test carried out by the staff of the Fuel Research Station on one of the fourteen retorts installed at the Glenboig works of the Bussey Coal Distillation Co., Ltd., have recently been issued by the Department of Scientific and Industrial Research (H.M. Stationery Office, price 9d. net).

These retorts were erected in 1929, and are of the type which are internally heated by the combustion of a portion of the charges in the retort, a mixture of steam and air being introduced near the base. The retort actually used for the test had previously been reconditioned, and had been in operation subsequently for about a month. In the course of the test, which lasted 124 hours, 89·14 tons of a weakly caking coal, sold as "Bothwell washed trebles," were carbonised at an average throughput of 17·24 tons per day. Operation was uniformly satisfactory, and no difficulty was experienced in charging or discharging, or in controlling the temperatures and other conditions.

Yield and Quality of Products

The yield of products obtained per ton of coal, containing 11·1 per cent. of moisture as charged, was as follows :—

Coke	cwt.	10·20
Tar	gal.	17·61
Liquor	gal.	49·4
Gas	c. ft.	40,270
	therms	76·0
Gas spirit	gal.	3·24

The tar was a normal low temperature product, representing 63 per cent. of the Gray-King assay yield. Of the coke made, 17 per cent. was breeze passing through a ½-in. screen.

No observations were made of the temperature inside the charge, but it must have been higher than the 600° C. registered by the thermo-couples in the retort wall. The volatile content of the coke, and of the breeze particularly, was rather higher than is usually obtained at this temperature, due apparently to the presence of a little incompletely carbonised material in the small sizes. Combustibility tests showed that the lump coke formed a satisfactory fuel for domestic grates of the vertical bar type. It was hard, and could be handled without suffering much breakage. The volume of gas made was high, but its calorific value—189 B.Th.U. per c. ft.—was low, due in part to leakage of about 10 per cent. of air into the system. The amount of light spirit present in the gas was high, and the total yield of tar and gas spirit was satisfactory. The ammoniacal liquor made was high in volume, but, in common with other low temperature liquors, of little or no commercial value.

Object of the Official Tests

The object of these tests carried out under the direction of the Department of Scientific and Industrial Research is to place in the hands of those interested accurate technical data on the quality and quantity of yields, the throughput of the plant, the working temperatures, and the general ease of working together with such other information as it may be possible to obtain under the limited conditions of the tests. It should be clearly understood that no attempt is made to pronounce on the commercial possibilities of plants which may be tested. The likelihood of commercial success can only be judged, after working a plant under a steady load for a long period and in the light of complete knowledge of local conditions, such as cost of raw material, quantity of raw material available, price and markets for products, cost of labour, etc.

Chemical Matters in Parliament

Bromine (Import)

ON Tuesday, July 21, Sir A. Knox asked the President of the Board of Trade the quantity of bromine landed in Great Britain from the Dead Sea Co. in the month of June ; and to what countries this was re-exported ?

Mr. W. Graham : During the month of June 1931, 507 cwt. of bromine and bromides were imported into the United Kingdom and registered as consigned from Palestine. For the rest I would refer the hon. and gallant Member to the answer I gave to his question on June 30.

Recovery of Quicksilver from Low-Grade Ore

METHODS and costs of recovering quicksilver from low-grade ore at the reduction plant of the Sulphur Bank Syndicate, Clearlake, California, are discussed by W. Bradley in Information Circular 6429 of the United States Bureau of Mines. This ore, which occurs as a surface deposit covering about 100 acres to a depth of 5 ft., was originally worked for sulphur, and as a whole contains only about 2 lb. of quicksilver per ton, but as the cinnabar occurs mostly in the fines, the ore can be enriched by screening and hand sorting until it will assay 8 lb. of quicksilver per ton or better, when it is considered furnace ore. Methods of recovery include screening and sorting the low-grade ore to obtain a furnace feed ; treatment of the ore in a rotary kiln ; precipitation of the dust carried from the furnace in the gas stream ; condensing quicksilver from the gas stream as (*a*) high-grade mud and (*b*) low-grade mud ; flotation treatment of low-grade mud to obtain high-grade concentrates ; and drying and retorting high-grade condenser mud and flotation concentrates. The plant described treats about 1,300 tons of ore per month and recovers about 9,100 lb. of quicksilver.

From Week to Week

We are pleased to announce that Professor Hinchley is progressing favourably after his recent operation.

Recent wills include :—Mr. John Martin, works manager and director of the North Devon Clay Co., Ltd., Torrington, £24,707 (net personalty £16,453).

The secretary of the Society of Chemical Industry, Mr. H. J. Pooley, has, we regret to hear, been suffering recently from phlebitis, but has now recovered.

A Polish firm, organised about a year ago for the manufacture of sulphuric acid and super-phosphates, is constructing a plant for the production of carbon tetrachloride and carbon bisulphide. Construction work is now under way and the new factory is expected to begin operations early in 1932.

Dr. J. D. Stirling has recently been appointed to the staff of the Hannah Dairy Research Institute, Kirkhill, Auchincruive, Ayr. For the past three years Dr. Stirling has been doing research work in bio-chemistry at the University of Glasgow under the direction of Prof. E. P. Cathcart, and later at Tübingen, in Germany, and Graz, in Austria.

With the closing of the lead mine at Wanlockhead (Scotland) on Friday, July 17, the last trace of this old-established industry has passed from the district. The Wanlockhead mine was the last to maintain operations in the district of Leadhills and Wanlockhead, and its closing down has affected over 200 workmen. This mine has been in active operation for 200 years.

The offices of the Argentine Chamber of Commerce in Great Britain have recently been moved from its former address at Regent Street, London, to the present quarters at River Plate House, 12/13, South Place, E.C.2. Mr. W. S. Barclay, general secretary of the British Empire Trade Exhibition of 1931 in Buenos Aires, has been appointed general manager of the Chamber.

Manchester Corporation Gas Committee, in its annual report, states that for the first time there was a deficit on the manufacture of sulphate of ammonia. During the year a loss of £12,274 has been sustained as against a profit of £3,642 for the previous year. This heavy loss is accounted for partly by increased cost of manufacture and partly by the competition from synthetic nitrogen. Foreign consumption has also diminished, the markets abroad being overstocked.

The Department of Scientific and Industrial Research have issued a further report as part of their survey on national coal resources. The present report on the Barnsley seam of the South Yorkshire area of Yorkshire, Nottinghamshire and Derbyshire coalfield, is the eighteenth of the series. In it are given the results of a detailed examination of sixteen complete sections of the seam taken at points well distributed over the area. This investigation has been carried out under the general directions of the South Yorkshire Survey Committee.

Lieut.-Colonel N. Seddon Brown, who in June resigned his position as managing director of the Amalgamated Cotton Mills Trust, has been appointed managing director of the Cellulose Acetate Silk Co., of Lancaster. This company was formed in 1928 and acquired a factory from the Non-Inflammable Film Co. Colonel Seddon Brown holds a number of important positions in the cotton industry. He is a vice-president of the Master Spinners' Federation, and is on the Council of the British Cotton Growing Association, the Empire Cotton Growing Corporation, and the Federation of British Industries.

Aston Technical College, which is the only College in the Midland counties offering courses to those engaged in the rubber industry, has issued its syllabus of classes during the Session 1931-32, which commences in September. The non-technical course is subdivided into two parts, and though it does not claim to go into detail it provides for imparting much useful information to those occupied in the rubber industry. The other subdivision goes deeper into the subject of the manufacture of rubber. The course relating to the technical side, more particularly for those who must understand rubber from the manufacturing standpoint, extends over three years and deals with rubber technology in various stages, with the chemistry of rubber, and with industrial physics.

Extensive damage was recently caused by fire to the warehouse of Middleton and Co., wholesale chemists, of Middlesbrough.

The contract for the coking and by-product plant for the South African Steel and Iron Industrial Corporation, which has a value of £450,000, was obtained by the Woodall-Duckham Co. in face of world-wide competition.

New York bankers interested in Chilean nitrate are reported to have welcomed the breakdown of the Paris negotiations, feeling that they can sell profitably as low as $30 per ton and capture markets from the synthetic producers.

In accordance with the pleasant custom of Imperial Chemical Industries, Ltd., of presenting long service awards to its employees, Sir Max Muspratt, who is a director of the company, received a gold watch from Sir Harry McGowan on Monday, in recognition of thirty-five years' service in the chemical industry.

Professor A. Archibald Boon has retired from the Chair of Chemistry at Edinburgh University. Professor Boon has been associated with the University for over 30 years, twelve of which have been as professor of chemistry. The title of Emeritus Professor has been conferred on him in recognition of his services.

The Broughton Analytical Laboratories, consulting and analytical chemists, formerly of 64, Devonshire Street, Hr. Broughton, Manchester, have removed their offices and laboratories to larger premises at 3, Ashbourne Grove, to which address all future correspondence and samples should be sent. Their telephone number is Broughton 2021.

Fourteen of the leading French publishing firms which specialise in the production of technological literature have combined to produce a *Bibliographie des livres français d'Industrie et de Technologie*. The lines of the *Catalogue of British Scientific and Technical Books* of the British Science Guild have been closely followed, with the difference that books published in 1929-30 precede the general catalogue for 1919-30, which forms the bulk of the work. An annual supplement to the bibliography is promised with a consolidated edition every third year.

It is reported by the University College of the South-West that the Department of Scientific and Industrial Research has decided to make Mr. E. M. Dodd, B.Sc., a grant of £280 to enable him to carry out research work with Dr. H. T. S. Britton, the lecturer in physical chemistry at the college, for a period of two years. Mr. Dodd, who is a native of Plymouth, went to the University College from Plymouth College in 1928. Last year he graduated in the University of London with first-class honours in chemistry, and since then has been working on complex cyanides under the direction of Dr. Britton.

According to returns given in the *Ministry of Labour Gazette* for July, 16,495 persons were registered as wholly unemployed on June 22, in respect of the chemical industry in Great Britain and Northern Ireland ; an additional 2,116 persons were affected by temporary stoppages. These figures do not include persons engaged in the manufacture of explosives (2,286 wholly unemployed, 450 temporary stoppages) ; paint, varnish, red and white leads (1,849 wholly unemployed, 211 temporary stoppages) ; and oil, glue, soap, ink and matches (7,636 wholly unemployed, 2,019 temporary stoppages). Except in the case of the group comprising oil, glue, soap, ink and match industries, these figures are almost identical with those recorded in the returns for May.

Obituary

Mr. Walter Byrne, of Landore, a well-known traveller for the firm of Burdells, manufacturing chemists, Sheffield.

Mr. Edwin Piercy, for many years partner and managing director of Edwin Piercy and Son, Ltd., chemical manure manufacturers, of York, aged 72.

Mr. Oliver Cromwell Townsend, the last male representative of the family of the late Mr. Joseph Townsend, the Glasgow chemical manufacturer who carried on business in Port-Dundas, Glasgow. Mr. Townsend was one of four sons who joined his father in business and about 35 years ago became manager of the Port-Dundas works. He afterwards became associated with the firm of Smith and Hill, Ltd., Brierley Hill Ironworks, Staffordshire, and for the last 30 years was secretary and general manager of that company.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

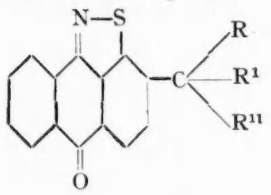
Abstracts of Accepted Specifications

346,992. Inhibiting the Action of Sulphuric Acid on Metals. Imperial Chemical Industries, Ltd., Millbank, London. From E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. Application date, April 15, 1930.

The action of sulphuric acid on metals is inhibited by adding monomercaptans of the class R—SH where R is a hydrocarbon radicle or an anthraquinonyl group either of which may contain one or more alkyl-amino- or alkoxyl groups. Thiophenol, thio-β-naphthol, benzylmercaptan, iso-amylmercaptan, isopropylmercaptan, and amino substituted mercaptans may be used and may be mixed with wetting or dispersing agents.

346,373. Dyes. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 30, 1929.

A 1 : 9-thiazole-anthrone having the formula



in which R represents hydrogen or halogen, R^1 and R^{11} represent halogen or together represent oxygen, or a substitution product, is condensed with an aromatic. *o*-aminohydroxy, *o*-aminomercaptan, or *o*-diamine compound. The products contain the 1:9-thiazole ring and also an oxazole, thiazole, or iminazole ring. Examples are given of the condensation of 1 : 9-thiazole-anthrone-2-carboxylic acid chloride with 2-amino-3-hydroxy-anthraquinone, *o*-phenylenediamine and others. The products may be halogenated, nitrated and reduced to amino derivatives, which may be acylated or condensed with negatively-substituted amino compounds.

346,387. Basic Condensation Products. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 2, 1929.

Emulsifying agents for preparing artificial rubber and other purposes are obtained by condensing higher fatty acids of the acrylic and acetic series, or their esters, chlorides or amides, with amino alcohols, having at least two amino groups, one of which is a tertiary one. Examples include oleic acid and α-diethylamino-β-hydroxy-propylamine, oleic acid ethyl ester and α-diethylamino-β-hydroxy-propylamine, and others.

346,425. Fatty Acid Condensation Products. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 4, 1930.

Unsaturated fatty acids containing more than eight carbon atoms in the molecule, or their glycerides are heated with sulphonic acids of aromatic hydroxy compounds in the presence of dilute sulphuric acid. In an example, wood oil is condensed, with 1- and 2-naphthol-6-sulphonic acids, the products being water-soluble, and suitable as auxiliary agents in dyeing and tanning.

346,438. Synthetic Waxes. A. Carpmael, London. From I.G. Farbenindustries Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 10, 1930.

Natural or artificial waxes are treated with alkylene oxides or their substitution products, *e.g.*, ethylene oxide, propylene oxide, trimethylene oxide, epichlorhydrin and glycerine anhydride. Montan wax, carnauba wax and shellac wax, with or without paraffin, ozokerite, etc., may be treated. The products are waxes particularly suitable for use in polishes.

346,486. Lactic Esters. Imperial Chemical Industries, Ltd., Millbank, London, W. R. H. Hurtley and T. S. Wheeler, Winnington Hall, Northwich, Cheshire. Application date, January 25, 1930.

Butyl alcohol is treated with the lactic ester of another alcohol, and the alcohol displaced is removed by distillation. Butyl lactate is obtained.

346,550. Polymerization of Alkylene Oxides. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, March 20, 1930.

Alkylene oxides are vaporised and passed at 40° to 200° C. over alkaline catalysts such as caustic potash, caustic soda, etc., to obtain highly polymerised wax-like products. Acid catalysts such as sodium bisulphate or aluminium sulphate may be used to obtain dioxane and its homologues. In an example, ethylene oxide is passed over anhydrous caustic soda to obtain a waxy or horn-like mass. If anhydrous sodium bisulphate is employed as the catalyst, dioxane and a small amount of acetaldehyde ethylene acetal are obtained. Other examples describe the treatment of propylene oxide.

346,658. Alcohols. Imperial Chemical Industries, Ltd., Millbank, London, and J. W. Armit, 18, Woodcote Park Road, Epsom, Surrey. Application date, December 13, 1929.

Alcohols boiling below 100° C. are purified by treating with a halogen in amount not less than that required to satisfy the unsaturated value of the alcohol. The alcohol is then distilled and the vapour passed through hot alkali to remove halogen acid, and fractionally condensed. Alternatively the condensed halogenated alcohol is mixed with alkali and the mixture fractionated.

346,676. Dyes and Intermediates. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 24, 1929.

Cyclic organic halogen compounds are dehalogenated by reduction with hydrazine or its derivatives, hydroquinone, dioxindole, hydrazobenzene, glyoxal, guanidine, formamide or formic acid in the presence of easily reducible metal oxides, carbonates, acetates, halides, etc., or the metals themselves. Inert solvents or suspending agents such as pyridine are used. Examples are given of the dehalogenation with hydrazine hydrate of 4 : Bz3 : Bz5-trichloroanthraquinone-2 : 1-(N) benzacridone, dichloromonobromo-anthraquinone-2 : 1-(N)-benzacridone tetrabromopyranthrone, tetrabromo-dichloro-benzanthrone, etc., and the treatment of various other cyclic compounds with phenylhydrazine, formic acid, dioxindole, etc.

346,677. Dyes. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 8, 1929.

An ester or amide of an *o*-aminoanthraquinone carboxylic acid is condensed with a negatively substituted heterocyclic compound or with a negatively substituted isocyclic compound having a system of at least four condensed rings and a free ortho position to the negative substituent. Alternatively, an ester or amide of an anthraquinone carboxylic acid containing a negative substituent in *o*-position to the carboxylic group is condensed with a heterocyclic compound or with an isocyclic compound having at least four condensed rings containing a nitrogen atom with a replaceable hydrogen atom and having a free *o*-position to the nitrogen atom, and ring closure effected to form the acridone. A number of examples are given.

346,685. Ethereal Sulphites. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, November 7, 1929.

Thionyl chloride is treated with chloroethyl alcohol or glycol to obtain dichlorodiethyl sulphite or glycol sulphite for use in destroying grain weevils.

346,785. SYNTHETIC RUBBER. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 17, 1930.

Emulsions of diolefines are polymerised and the latex obtained is coagulated by adding salts in concentrated aqueous solution, *e.g.*, alkali salts of inorganic or organic acids, such as sodium, potassium and ammonium halides, carbonates, sulphates, nitrates, phosphates, acetates, benzene sulphonates, naphthalene sulphonates, etc. When the emulsions are formed by the aid of alkylated naphthalene sulphonates, or hydrochloride of pentadecyl-μ-glyoxaldine or of ω-diethylamino-4-ethoxy-anilide of oleic acid, the latices cannot be coagulated by acids but are coagulated by the above salts. In an example, an emulsion of butadiene or isoprene with sodium oleate is polymerised, and coagulated by saturated sodium chloride solution.

347,137. CHLORINE COMPOUNDS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 22, 1930.

An ore is briquetted with coal or coke and treated in a reducing furnace with chlorine and the products of combustion of carbon monoxide. Aluminium or calcium phosphate may be treated in this manner to obtain phosphorus oxychloride and aluminium or calcium chloride, bauxite may be treated to obtain aluminium chloride and silica, and ilmenite to obtain ferric and titanium chlorides.

346,822. ALIPHATIC KETONES. Soc. des Brevets Etrangers Lefranc et Cie., 21, Avenue Montaigne, Paris. International Convention date, January 24, 1929.

Alkaline earth salts of higher fatty acids, *e.g.*, calcium butyrate, are heated with 10–30 per cent. by weight of calcium oxide or hydrate which lowers the melting point of the mixture and also permits the ketone vapours produced to escape more readily. The temperature may be about 300° C. for calcium butyrate. If fatty acid salts obtained by fermentation are used, the calcium oxide used combines with the nitrogen and sulphur-containing impurities. Superheated steam is preferably passed over the mixture during the reaction.

346,849. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 23, 1929.

Anthraquinone-benzacridones or their halogen derivatives are treated with agents capable of replacing oxygen by halogen, *e.g.*, phosphorus penta-chloride or thionylchloride in an inert organic solvent or diluent. The products are halogenated with an agent which replaces hydrogen by halogen, in the presence of an inert solvent or diluent. The products are dyestuffs or intermediates and the latter may be treated with agents splitting off halogen, such as phenol or sulphur dioxide, to obtain dyestuffs. In an example benzacridone is halogenated in nitrobenzene with sulphuryl chloride in the presence of chloriodine, and the resulting trichlor-anthraquinone-1 : 2-benzacridone is treated with phosphorus pentachloride in trichlorbenzene and then with chlorine to obtain a red-violet dyestuff. If thionyl chloride is used in the first stage, the product is treated with phenol in *o*-dichlorbenzene to obtain a pink dyestuff. Other examples are given. Reference has been directed by the Comptroller to Specification No. 295,770.

346,853. VULCANISATION ACCELERATORS. Dunlop Rubber Co., Ltd., 32,. Osnaburgh Street, London. D. F. Twiss, and F. A. Jones, Fort Dunlop, Erdington, Birmingham. Application date, December 23, 1929.

The hydrogen atom of the thiol group of mercapto-benzothiazole is replaced by an acyl organic radicle such as benzoyl or nitrobenzoyl, stearyl or palmityl, to obtain vulcanisation accelerators. In an example, *p*-nitrobenzoyl chloride and mercapto-benzo-thioazole are dissolved in benzene and refluxed yielding a product having the formula:

Some other examples are given.

346,896. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 7, 1929. Addition to 248,791. (See THE CHEMICAL AGE, Vol. XIV, p. 527.)

2-Aroyloxy-naphthalene-3-carboxylic acids and their esters and amides are treated with acid condensing agents to obtain the 1-aroyl-2-hydroxy compounds and are then ring-closed to obtain hydroxy-benzanthrone carboxylic acids. In an example, benzoic ester of 2 : 3-oxy-naphthoic acid is treated with sodium-aluminium chloride and the product separated, boiled with hydrochloric acid, and then treated with sodium carbonate to obtain 4-hydroxy-benzanthrone-3-carboxylic acid. Other examples are given.

346,938. HYDROXY-CARBOXYLIC ACIDS. W. W. Groves, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, March 12, 1930.

1 : 4-Dichlor-2-hydroxybenzene, 1-chlor-4-methyl-2-hydroxybenzene or 1-methyl-4-chlor-2-hydroxybenzene are dissolved in caustic soda or potash and evaporated and the dry powder treated with carbon dioxide under pressure in an autoclave. The product is dissolved in hot water and filtered, and the corresponding hydroxy carboyxlic acid is precipitated by hydrochloric acid, and filtered off.

346,945. SULPHONATED FATS, OILS, ETC. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, March 15, 1929.

Fats, fatty oils, fatty acids, and aliphatic hydrocarbons containing at least eight carbon atoms are sulphonated by sulphur trioxide, fuming sulphuric acid, or chlor-sulphonic acid in the presence of liquid sulphur dioxide as a diluent, and as a catalyst which enables mineral oils to be highly sulphonated. Examples are given of the sulphonation of castor oil and motor oil.

347,083. ORGANO ARSENIC COMPOUNDS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, Spetember 4, 1929.

Halogen acylamino phenylarsinic acids are treated with a salt of a carboxylic acid to obtain ester derivatives which have therapeutic properties. Examples are given of the preparation of various esters of 4-glycollyl-amino-phenylarsinic acid and 4-glycollyl-amino-2-methyl-phenyl-arsinic acid.

347,095. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, November 20, 1929.

1-Anilido-anthraquinone, which may contain chlorine atoms and which contains a methyl group in *o*-position to the nitrogen atom, is treated with chlorine or agents supplying it at temperatures above 170° C. in an organic solvent in the absence of acid-binding agents and water. Products are obtained which when saponified yield chloro-anthraquinone-2 : 1-benzacridones containing substantial amounts of a hexachloro derivative. The products are red vat dyes which may be treated with reducing agents, *e.g.*, stannous chloride, to reduce the chlorine content and obtain other vat dyes. The leuco compounds obtained from hexachlor-anthraquinone-2 : 1-benzacridone are difficultly soluble and may be separated from leuco derivatives from lower chlorinated acridones. Their solubility may be increased by treatment with potassium bichromate and dilute sulphuric acid. Examples are given. Reference has been directed by the Comptroller to Specifications Nos. 5,534/13 and 14,360/14.

347,097. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, December 11, 1928.

Disazo dyes of the type $R_1-N=N-R_2-N=N-R_3$ in which R_1 is the residue of a diazotisable aromatic amine, R_2 is the residue of an aromatic middle component carrying an OH group in *o*-position to the second azo group, and R_3 is the residue of 2 : 5 : 7-amino-naphthoic acid or an N substituted derivative thereof, coupled alkaline, are treated with agents yielding copper, in substance, in a dye bath, or on the fibre. In an example, the dyestuff 2-amino-naphthalene-4 : 8-disulphonic acid → m-amino-*p*-cresol → (alkaline) phenyl-5 : 7 : 2-acid is treated with copper sulphate yielding a product which dyes cotton blue and gives level shades fast to light on viscose. Other examples are given.

Specifications Accepted with Date of Application

351,948. Halogen-containing vat-dyestuffs of the dibenzanthrone series, Manufacture of. I.G. Farbenindustrie Akt.-Ges. April 27, 1929.

351,971. Complex salts, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) April 1, 1930.

351,975. Sulphur from illuminating, coke-oven, and like gases, Removal of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) December 24, 1929.

351,994. Gases containing hydrocarbons, Treatment of. T. S. Wheeler, W. Francis and Imperial Chemical Industries, Ltd. March 29, 1930.

351,004. Chromiferous dyestuffs, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) January 31, 1930.

352,005. Zinciferous materials containing lead and other contaminating metals, Reduction of. L. Mellersh-Jackson. (*New Jersey Zinc Co.*) February 3, 1930.

352,016. Sulphuric acid chambers. Fison, Packard, and Prentice, Ltd., Chance and Hunt, Ltd., and R. T. Maudsley. March 28, 1930.

352,056. Acetaldehyde condensation reactions. E. J. Boake and L. W. E. Townsend. March 29, 1930.

352,070. Alkyl or aryl-oxy-ethylidene esters, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) April 4, 1930.

352,076. Dibenzanthrone and isodibenzanthrone, Production of. Selden Co. April 4, 1929.

352,133. Vulcanisation of rubber and rubber-like substances. Imperial Chemical Industries, Ltd., H. M. Bunbury, W. J. S. Naunton and W. A. Sexton. April 26, 1930.

352,137. Borax ores, Treatment of. H. Blumenberg, jun. April 28, 1930.

352,138. Calcium borate and sodium nitrate. Production of. H. Blumenberg, jun. April 29, 1930. Addition to 13,060/30.

352,139. Acid wool dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. April 29, 1930. Addition to 299,721.

352,164. Purification of crude hydrocarbons or their derivatives. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) May 17, 1930.

352,165. Vulcanisation accelerators, and the application thereof. Imperial Chemical Industries, Ltd., H. M. Bunbury, W. J. S Naunton, and W. A. Sexton. May 17, 1930.

352,167. Vulcanisation products, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustire Akt.-Ges.*) May 19, 1930.

352,176. Aliphatic acid anhydrides, specially acetic anhydride, Preparation of. G. B. Ellis. (*C. F. Boehringer und Soehne Ges.*) May 22, 1930.

352,199. Refining aluminium, magnesium, and their alloys. H. C. Hall. June 5, 1930.

352,258. Conservation of unstable chemical fertilisers by coating. A. Mentzel. July 19, 1929.

352,264. Calcium cyanamide, Preparation of. N. Caro and A. R. Frank. December 18, 7929.

352,280. Gas mixtures containing saturated hydrocarbons, Process for treating. Soc. d'Etudes Scientifiques et d'Entreprises Industrielles. July 29, 1929. Addition to 1,377/30.

352,283. Stable reduction compounds of vat-dyestuffs, Manufacture of. W. W. Groves. (*I.G. Farbenindustrie Akt.-Ges.*) August 1, 1930. Addition to 14,794/29 and 22,866/30.

352,307. Potassium nitrate, sodium bicarbonate, and compound fertilisers, Production of. Soc. Chimique de la Grande-Paroisse Azote et Produits Chimiques. November 15, 1929.

352,309. Ammonium phosphates, Union Chimique Belge Soc. Anon. November 7, 1929.

352,367. Phosphoric anhydride and phosphoric acid, Preparation of. Metallges. Akt.-Ges. November 29, 1929.

352,368. Polyazo dyestuffs, Manufacture of. J. T. Geigy. November 29, 1929.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Aische, M. I. Insoluble zinc compounds. 20,375. July 16.

Avery, H. B., Manchester Oxide Co., Ltd., and Williams, H. E. Purification of sulphur, etc. 20,469. July 17.

Carbide and Carbon Chemicals Corporation. Concentrating acetic, etc., acids. 20,176. July 14. (United States, July 25, 1930.)

Chemische Fabrik vorm. Sandoz. Preparation of condensation products of anthraquinone series. 20,544. July 17. (Germany, July 18, 1930.)

Clark, L. M., Imperial Chemical Industries, Ltd., and Spittle, H. M. Manufacture of sodium aluminate. 20,555. July 17.

Coley, H. E. Distillation process for zinc oxides. 20,547. July 17.

Dayton Synthetic Chemicals, Inc. Protective coatings, etc. 20,106. July 13. (United States, February 16.)

Dreyfus, H. Manufacture of aliphatic compounds. 20,355. July 15.

Dutt, E. E. Electrodeposition of metals. 20,435. July 16.

Groves, W. W. (*I.G. Farbenindustrie Akt.-Ges.*). Manufacture of 6-bromo-2-hydroxy-3-naphthoic acid. 20,225. July 14.

—— Manufacture of sulphuric acid esters of alcohols, etc. 20,533. July 17.

Haddan, R. (*Federal Phosphorus Co.*). Manufacture of arylamines. 20,445. July 16.

Hamilton, W. M., and Imperial Chemical Industries, Ltd. Vat dyeing, etc. 20,512. July 17.

—— Application of vat colours. 20,064. July 13.

I.G. Farbenindustrie Akt.-Ges. Production of superimposed colloid layers. 20,088. July 13. (Germany, July 11, 1930.)

—— Process for opening up calcium phosphates. 20,354. July 15. (Germany, July 19, 1930.)

(*I.G. Farbenindustrie Akt.-Ges.*). Johnson, J. Y. Lacquers, films, etc. 20,067. July 13.

—— Production of mixed fertilisers. 20,068. July 13.

—— Production of shaped articles from masses containing silicon. 20,329. July 15.

—— Apparatus for working-up gases containing hydrogen. 20,520. July 17.

Imperial Chemical Industries, Ltd., and Laurie, L. G. Detergent compositions. 20,210. July 14.

Kaufmann, A. Manufacture of aromatic hydrocarbons, etc. 20,117. July 13. (Germany, July 23, 1930.)

Kinetic Chemicals, Inc. Organic compounds. 20,049. July 13. (United States, September 20, 1930.)

—— Production of chemical compounds. 20,050. July 13. (United States, February 18.)

Lutz, E. Distillation of high-boiling substances. 20,231. July 14. (Germany, July 18, 1930.)

Naugatuck Chemical Co. Production of rubber cements. 20,265. July 14. (United States, July 25, 1930.)

Pickard, J. A. Filters for liquids. 20,462. July 17.

Richfield Oil Co. of California. Refining hydrocarbon oils. 20,127. July 13. (April 15, 1930.) (United States, May 8, 1929.)

Salerni, P. M. Apparatus for heat treatment of materials. 20,560, 20,561, 20,574. July 17.

—— Carbonisation of carbonaceous materials. 20,562, 20,563, 20,564. July 17.

Schlubach, H. Decomposition of highly polymerised carbohydrates. 20,541. July 17. (Germany, July 17, 1930.)

Soc. des Produits Chimiques Alterra Soc. Anon. Manufacture of alumina, etc. 20,455. July 16. (Austria, July 26, 1930.)

Detection of Mustard Gas in Air

No Award Made by International Committee at Geneva

It has been announced that the prize offered by the International Committee of the Red Cross, at Geneva, for a reagent to detect small amounts of deadly mustard gas in the air has not been awarded. The jury of chemists found none of the submitted reagents satisfactory. According to the terms of the contest, the reagent should have been able to detect with certainty less than one grain of the gas in about one quart of air (0·07 mg. in 1 litre). The amount of the prize was 10,000 Swiss francs, about $2,000. The contest closed last December, and the jury has since been considering the reagents submitted with their methods of use. These were known to the jury only by number, the names of the authors being kept separately. All the methods and reagents were examined in detail, but the results were not sufficiently conclusive, and the jury decided it could not award the prize offered by the committee. The jury consisted of the following: Professor G. Urbain, of the Sorbonne, director of the Chemical Institute of the University of Paris, president; Professor F. Haber, (Berlin Academy); Professor F. Swarts (University of Ghent); Sir William Pope (Cambridge University); Dr. H. Zangger (University of Zürich); and Professor Demolis (technical adviser to the International Committee of the Red Cross).

Caustic Soda in Poland

According to the United States Commercial Attaché at Warsaw, a recent development in the Polish sodium products industry is the opening of the fourth manufacturing centre, producing caustic soda by electrolytic methods, at Moscise. The Polish production of caustic soda in 1930 was 13,600 metric tons, compared with 16,000 tons in 1929. Exports during 1930 were 2,000 tons. Despite the comparatively low prices for caustic soda, Russian products penetrated the Polish market, seriously affecting local sales and production.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£18 15s. per ton d/d address U.K. in casks.
ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.
ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.
ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.
AMMONIUM BICHROMATE.—8½d. per lb. d/d U.K., or 8d. c.i.f. export.
BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
BLEACHING POWDER, 35/37%.—Spot, £7 19s. per ton d/d station in casks, special terms for contracts.
BORAX, COMMERCIAL.—Crystals, £13 10s. per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags. carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)
CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d station in drums.
CHROMIUM OXIDE.—9d. to 9½d. per lb. according to quantity d/d U.K.
CHROMETAN.—Crystals, 3½d. per lb. Liquor, £18 12s. 6d. per ton d/d U.K.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 11d. to 2s. 4d. per gall.; pyridinised industrial, 2s. 1d. to 2s. 6d. per gall.; mineralised, 3s. to 3s. 4d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4½d. per lb. nett d/d U.K., discount according to quantity; ground ½d. per lb. extra.
POTASSIUM CHLORATE.—3½d. per lb. ex-wharf, London, in cwt. kegs.
POTASSIUM CHROMATE.—8½d. per lb. d/d U.K., or 8d. c.i.f. export.
SALAMMONIAC.—Firsts lump, spot, £40 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE, UNGROUND.—Spot, £3 10s. per ton d/d station in bulk.
SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.
SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.
SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.
SODIUM BICHROMATE CRYSTALS (CAKE AND POWDER)—3½d. per lb. nett d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.
SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.
SODIUM CHLORATE.—2¾d. per lb.
SODIUM CHROMATE.—3⅞d. per lb. d/d U.K., or 3½d. c.i.f. export.
SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.
SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.
SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.
SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton, d/d in free drums. Crystals—Spot, £8 5s. per ton, d/d in free casks.
SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4½d. to 6½d. per lb. Crude 60's 1s. to 1s. 1d. per gall. August/December.
ACID CRESYLIC 99/100.—1s. 9d. to 1s. 10d. per gall. B.P., 3s. 6d. per gall. 97/99.—Refined, 2s. 2d. to 2s. 3d. per gall. Pale, 98%, 1s. 7d. to 1s. 8d. Dark, 1s. 4d. to 1s. 4½d.
ANTHRACENE OIL, STRAINED (GREEN OIL).—4½d. to 4¾d. per gall.
BENZOLE.—Prices at works: Crude, 5½d. to 6½d. per gall.; Standard Motor, 1s. to 1s. 1d. per gall. 90%.—1s. 1d. to 1s. 2d. per gall. Pure, 1s. 4d. to 1s. 5d. per gall.
TOLUOLE.—90%, 1s. 8d. to 1s. 9d. per gall. Pure, 1s. 10d. to 1s. 11d. per gall.
XYLOL.—1s. 7d. to 1s. 8d. per gall. Pure, 1s. 10d to 1s. 11d. per gall.
CREOSOTE.—Standard specification, for export, 5dd. to 5¼d. net per gall. f.o.b.; for Home, 4d. per gall. d/d.
NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent, 90/190, 1s. to 1s. 2d. per gall.
NAPHTHALENE.—Purified Crystals, £10 per ton.
PITCH.—Medium soft, 45s. to 47s. 6d. per ton, in bulk at makers' works.
PYRIDINE.—90/140, 3s. to 3s. 3d. per gall. 90/160, 3s. 3d. to 3s. 6d. per gall. 90/180, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. per lb. 100%.
ACID GAMMA.—Spot, 3s. 3d. per lb. 100% d/d buyer's works.
ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
ACID NAPHTHIONIC.—1s. 2d. per lb. 100% d/d buyer's works.
ACID NEVILLE AND WINTHER.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.
ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.
ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZALDEHYDE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.
BENZIDINE BASE.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
BENZOIC ACID.—Spot, 1s. 8½d. per lb. d/d buyer's works.
o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.
m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.
p-CRESOL 34·5° C.—1s. 9d. per lb., in ton lots.
DICHLORANILINE.—2s. 5d. per lb.
DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE.—£74 per ton d/d.
DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 7½d. per lb.
DIPHENYLAMINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
a-NAPHTHOL.—Spot, 1s. 9d. per lb. d/d buyer's works.
B-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.
a-NAPHTHYLAMINE.—Spot, 10½d. per lb. d/d buyer's works.
B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.
o-NITRANILINE.—5s. 11d. per lb.
m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 6½d. per lb., 5-cwt. lots, drums extra, d/d buyer's works.
NITRONAPHTHALENE.—8½d. per lb.
R. SALT.—Spot, 2s. per lb. 100% d/d buyer's works.
SODIUM NAPHTHIONATE.—Spot, 1s. 6d. per lb. 100% d/d buyer's works.
o-TOLUIDINE.—Spot, 8d. per lb., drums extra, d/d buyer's works.
p-TOLUIDINE.—Spot, 1s. 6d. per lb. d/d buyer's works.
m-XYLIDINE ACETATE.—3s. 3d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £7 5s. to £7 10s. per ton. Grey, £12 per ton. Liquor, 9d. per gall.
ACETONE.—£63 to £65 per ton.
CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.
IRON LIQUOR.—24°/30° Tw., 10d. to 1s. 2d. per gall.
RED LIQUOR.—16° Tw., 8½d. to 10d. per gall.
WOOD CREOSOTE.—1s. 9d. per gall., unrefined.
WOOD NAPHTHA, MISCIBLE.—2s. 9d. to 2s. 11s. per gall., according to quantity. Solvent, 3s. 9d. per gall.
WOOD TAR.—£4 to £5 per ton.
BROWN SUGAR OF LEAD.—£32 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 1d. per lb., according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £7 10s. per ton, according to quality.
CADMIUM SULPHIDE.—4s. 6d. to 5s. per lb.
CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.
CARBON BLACK.—3d. to 4d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity: drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 6d. per lb.
INDIARUBBER SUBSTITUTES, WHITE.—4½d. to 5½d. per lb.; Dark, 4½d. to 4⅞d. per lb.
LAMP BLACK.—£28 per ton, barrels free.
LITHOPONE, 30%.—£18 to £20 per ton.
SULPHUR.—£9 10s. to £13 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.
VERMILION, PALE OR DEEP.—6s. 4d. to 6s. 10d. per lb.
ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACETANILIDE.—1s. 4½d. to 1s. 6d. per lb.

ACID, ACETIC, PURE, 80%.—£37 5s. per ton d/d address U.K. in casks.

ACID, ACETYL SALICYLIC.—2s. 7d. to 2s. 9d. per lb., according to quantity.

ACID, BENZOIC B.P.—1s. 10d. per lb., for synthetic product. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £31 per ton; powder, £32 per ton; For one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—10½d. per lb., less 5%.

ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. 3d. per lb. in ¼-cwt. lots. Packages extra. Special prices for quantities and contracts.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. for 28-lb. lots; Resublimed, 8s. 6d. per lb. for 28-lb. lots, d/d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—10½d. per lb., less 5%.

AMIDOL.—7s. 6d. to 11s. 3d. per lb., according to quantity.

AMMONIUM BENZOATE.—3s. 6d. per lb.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5-cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ¼-cwt. lots. Packages extra. Special prices for quantities and contracts.

ATROPHINE SULPHATE.—7s. to 7s. 6d. per oz., according to quantity.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—2s. 10d. per lb.

BISMUTH CARBONATE.—7s. 9d. per lb.

BISMUTH CITRATE.—8s. 7d. per lb.

BISMUTH SALICYLATE.—7s. 11d. per lb.

BISMUTH SUBNITRATE.—6s. 9d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 6d. per lb.

BISMUTH OXIDE.—10s. 9d. per lb.

BISMUTH SUBCHLORIDE.—10s. 5d. per lb.

BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb. Liquor Bismuth B.P., in W. Qts., 1s. 2½d. per lb.; 6 W. Qts., 1s. per lb.; 12 W. Qts., 10½d. per lb.; 36 W. Qts., 10d. per lb.

BORAX B.P.—Crystal, £21 10s. per ton; powder, £22 per ton; for one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

BROMIDES.—Ammonium, 1s. 9d. per lb.; potassium, 1s. 4½d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 7d. per lb. Prices for 1-cwt. lots.

CAFFEIN, PURE.—6s. 6d. per lb.

CAFFEIN CITRAS.—5s. per lb.

CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 3d. per lb., according to quantity.

CAMPHOR.—Refined flowers, 2s. 8d. to 2s. 10d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—2s. 11½d. to 3s. 1½d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 6d. per lb., according to quantity.

ETHERS.—S.G. ·730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—30s. per cwt., in barrels, ex wharf.

GLUCOSE, MEDICINAL.—1s. 6d. to 2s. per lb. for large quantities.

HEXAMINE.—1s. 10d. to 2s. per lb., according to quantity.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.

HYDROQUINONE.—4s. 7d. per lb. in 1-lb. lots; 3s. 5½d. per lb. in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 11d. to 3s. 4d. per lb.; potassium, 3s. 2d. to 3s. 7d. per lb.; sodium, 3s. 1d. to 3s. 6d. per lb.; for 28-lb. lots.

IRON AMMONIUM CITRATE.—B.P., 1s. 9d. per lb., for 28-lb. lots. Green, 2s. 6d. per lb., list price. U.S.P., 2s. 7d. per lb. list price.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 8¾d. per oz.

MAGNESIUM CARBONATE.—Light B.P., 36s. per cwt.

MAGNESIUM OXIDE.—Light Commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 14s. 6d. per lb. net; Synthetic, 8s. 6d. to 12s. per lb.; Synthetic detached crystals, 8s. 6d. to 10s. per lb., according to quantity; Liquid (95%), 9s. per lb.

MERCURIALS B.P.—Up to 1-cwt. lots, Red Oxide, crystals, 7s. 4d. to 7s. 5d. per lb., levig., 6s. 11d. to 7s. per lb.; Corrosive Sublimate, Lump, 5s. 10d. to 5s. 11d. per lb., Powder, 5s. 3d. to 5s. 4d. per lb.; White Precipitate, Lump, 5s. 10d. to 5s. 11d. per lb., Powder, 5s. 11d. to 6s. per lb.; Calomel, 6s. 3d. to 6s. 4d. per lb.; Yellow Oxide, 6s. 9d. to 6s. 10d. per lb.; Persulph, B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 6s. 5d. to 6s. 6d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 3d. to 1s. 4d. per lb.

PARAFORMALDEHYDE.—1s. 6d. per lb.

PARALDEHYDE.—1s. 1d. per lb.

PHENACETIN.—3s. 9d. to 4s. 1d. per lb.

PHENOLPHTHALEIN.—5s. to 5s. 2½d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—79s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P., 1s. 7d. per lb. for 28-lb. lots.

POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125-lb. kegs.

POTASSIUM IODIDE.—16s. 8d. to 17s. 9d. per lb., as to quantity.

POTASSIUM METABISULPHITE.—50s. per cwt. d/dLondon, kegs free.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. per oz. for 1,000-oz. lots.

SACCHARIN.—43s. 6d. per lb.

SALICIN.—16s. 6d. to 17s. 6d. per lb., according to quantity.

SILVER NITRATE.—10d. per oz. for 500-oz. lots, sticks, 2d. per oz. extra.

SODIUM BARBITONUM.—8s. 6d. to 9s. per lb. for 1-cwt. lots.

SODIUM BENZOATE B.P.—1s. 6½d. to 1s. 7½d. per lb.

SODIUM CITRATE.—B.P.C. 1911, 1s. 4d. per lb. B.P.C. 1923, and U.S.P., 1s. 8d. per lb. for 28-lb. lots.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. per cwt. net, ton lots, d/s of 5 cwt. Crystals, 2s. 6d. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£26 to £28 per ton, according to quantity. Delivered U.K.

STRYCHNINE, ALKALOID CRYSTAL, 2s. per oz.; hydrochloride, 1s. 9½d. per oz.; nitrate, 1s. 8d. per oz.; sulphate, 1s. 9d. per oz., for 1,000-oz. quantities.

TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.

THYMOL.—Puriss, 6s. 1½d. to 7s. per lb., according to quantity. Natural, 12s. per lb.

ZINC STEARATE.—1s. 4d. to 1s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—9s. per lb.

AMYL ACETATE.—2s. 3d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL CINNAMIC ALDEHYDE.—9s. per lb.

AMYL SALICYLATE.—2s. 6d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE ALCOHOL.—1s. 9d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 9d. per lb.

BENZYL BENZOATE.—2s. 2d. per lb.

CINNAMIC ALDEHYDE NATURAL.—11s. 9d. per lb.

COUMARIN.—12s. per lb.

CITRONELLOL.—6s. 6d. per lb.

CITRAL.—6s. 6d. per lb.

ETHYL CINNAMATE.—6s. 9d. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—8s. per lb.

GERANIOL.—6s. to 10s. per lb.

GERANIOL (FROM PALMAROSA).—15s. per lb.

HELIOTROPINE.—5s. 6d. per lb.

ISO EUGENOL.—9s. 6d. per lb.

LINALOL (EX BOIS DE ROSE).—5s. 6d. per lb.

LINALYL ACETATE, EX BOIS DE ROSE.—7s. per lb. Ex Shui Oil, 7s. 6d. per lb.

METHYL ANTHRANILATE.—6s. 3d. per lb.

METHYL BENZOATE.—4s. 3d. per lb.

MUSK XYLOL.—6s. 6d. per lb.

PHENYL ETHYL ACETATE.—10s. per lb.

PHENYL ETHYL ALCOHOL.—8s. 3d. per lb.

RHODINOL.—40s. per lb.

SAFROL—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—14s. 6d. to 16s. 6d. per lb. Ex Guaiacol.—13s. to 15s. per lb.

Essential Oils

ANISE OIL.—2s. 6d. per lb.

BERGAMOT OIL.—8s. 6d. per lb.

BOURBON GERANIUM OIL.—17s. 6d. per lb.

CAMPHOR OIL.—White, 2s. per lb.; Brown, 1s. 6d. per lb.

CANANGA.—Java, 8s. per lb.

CINNAMON OIL LEAF.—4s. per oz.

CITRONELLA OIL.—Java, 2s. 6d. per lb., c.i.f. Pure Ceylon, 2s. per lb.

CLOVE OIL, 90/92%.—6s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%—1s. 5d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 9s. per lb.

LEMON OIL.—4s. 3d. per lb.

LEMONGRASS OIL.—3s. per lb.

ORANGE, SWEET.—8s. per lb.

OTTO OF ROSE.—Anatolian, 45s. per oz.; Bulgarian, 65s. per oz.

PALMA ROSA.—9s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, July 23, 1931.

MARKETS have continued on steady, there being a fair amount of inquiry coming to hand and prices remain steady.

General Chemicals

ACETONE.—Unchanged at £60 to £63 per ton according to quantity, with the product being in regular request.

ACID ACETIC.—£36 5s. to £38 5s. for technical 80%, and £37 5s. to £39 5s. for pure 80%, with the market receiving regular demands.

ACID CITRIC.—There is no improvement in the demand and price remains easy at 11½d. per lb., less 5%.

ACID, FORMIC.—In good request, with the market steady at £37 per ton.

ACID, OXALIC.—Firm at £34 per ton in casks, and £35 per ton in 1 cwt. kegs, carriage paid.

ACID, TARTARIC.—Has been in a little better demand with the price unchanged at about 10¾d. per lb., less 5%.

ALUMINA SULPHATE.—Unchanged at £7 5s. to £8 5s. per ton for 17/18% iron free material, with a fairly good demand.

ARSENIC.—Cornish material is not available for the time being and the market is nominal at about £20 per ton. Imported material available at about £19 to £19 10s.

CREAM OF TARTAR.—Unchanged at about £78 to £79 per ton and in fair demand.

COPPER SULPHATE.—Firm at about £21 per ton, free on rails London.

FORMALDEHYDE.—A regular demand is being received with the market steady at about £28 per ton.

LEAD ACETATE.—White is quoted at about £31 15s. per ton; brown, £1 per ton less, with an improved demand.

LITHOPONE.—In steady request at about £18 to £22 per ton, according to grade and quantity.

POTASSIUM BICHROMATE.—Firm at 4¼d. per lb., with discounts for contracts, and in fair demand.

POTASSIUM CHLORATE.—£28 to £32 per ton, and there is a fair amount of business.

PERMANGANATE OF POTASH.—Demand has been somewhat better than of late and the price is firm at 5¾d. to 5½d. per lb., ex warehouse London for B.P. needle crystals.

SODIUM BICHROMATE.—The market is firm at 3½d. per lb., with discounts for contracts and in steady request.

SODIUM HYPOSULPHITE.—Photographic crystals continue in good request at £14 5s. per ton, with the commercial product quoted at £8 10s. per ton.

SODIUM PRUSSIATE.—Continues firm at 4¾d. to 5¼d. per lb.

TARTAR EMETIC.—Unchanged at 10½d. per lb. with a small demand.

ZINC SULPHATE.—Unchanged at £10 10s. per ton.

Coal Tar Products

THERE is no change to report in the coal tar products market; prices remain unchanged.

MOTOR BENZOL.—Unchanged at about 1s. 4½d. to 1s. 5½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Quoted at about 1s. 1½d. to 1s. 2d. per gallon f.o.r.

HEAVY NAPHTHA.—Remains at about 11d. to 1s. 0½d. per gallon f.o.r.

CREOSOTE OIL.—Worth about 3d. to 3½d. per gallon f.o.r. in the North, and about 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Obtainable at about 1s. 8d. per gallon for the 98/100% quality, and at about 1s. 6d. per gallon for the dark quality 95/97%.

NAPHTHALENES.—Remain at about £3 10s. to £3 15s. per ton for the firelighter quality, at about £4 to £4 5s. per ton for the 74/76 quality, and at about £5 per ton for the 76/78 quality.

PITCH.—Quoted at about 42s. 6d. to 45s. per ton, f.o.b. East Coast port, for forward delivery.

THE following additional prices have been reported:—

CARBOLIC ACID.—Prices to-day are unchanged—5-ton lots are quoted at 5½d. with small contract quantities at 6¼d. per lb. in bulk packing.

METHYL SALICYLATE.—Present prices are: 1-ton lots, 1s. 3d. per lb.; 5-cwt. lots, 1s. 3¼d. per lb.; 1-cwt. lots, 1s. 3½d. per lb. less, 1s. 4d. per lb.

SODIUM SALICYLATE.—Powder is 1s. 10½d. and crystal 1s. 11½d. per lb., in 1-ton lots; 10-cwt. lots, 1s. 11d. and 2s. per lb. respectively.

VANILLIN.—For clove oil vanillin there is a good market, prices of 14s. 6d. to 16s. 6d. are being obtained. Many English buyers insist on using guaranteed clove oil material.

SACCHARIN.—Is unchanged at 43s. 6d. per lb. net, duty paid, delivered.

ASPIRIN.—2s. 7d. to 2s. 9d. per lb.

PHENOLPHTHALEIN.—There is a steady market at 5s. per lb. for 10 cwts., 5s. 1d. for 2 cwts., and any smaller quantities 5s. 2½d. per lb.

Latest Oil Prices

LONDON, July 22.—LINSEED OIL was quiet and 2s. 6d. to 5s. lower. Spot, £18 5s., ex mill; August, £16 15s.; September-December, £17; January-April, £17 15s., naked. RAPE OIL was dull and lower. Crude extracted, £26; technical refined, £27 10s., naked, ex wharf. COTTON OIL was quiet. Egyptian crude, £19; refined common edible, £22; deodorised, £24, naked, ex mill. TURPENTINE was steady. American, spot, 47s.; September-December, 39s. 6d. per cwt.

HULL.—LINSEED OIL.—Spot to August quoted £17 5s., naked; September-December, £17 7s. 6d.; January-April, £17 15s. COTTON OIL.—Egyptian, crude, spot, £19 10s.; edible, refined, spot, £22 5s.; technical, spot, £21 15s.; deodorised, £24 5s. PALM KERNEL OIL.—Crude, naked, f.m.q., spot, £20 10s. GROUNDNUT OIL.—Crushed extracted, spot, £24 10s.; deodorised, £28 10s. RAPE OIL.—Crushed extracted, spot, £25 10s.; refined, £27 10s. SOYA OIL.—Crushed extracted, spot, £17 10s.; deodorised, £21 per ton. COD OIL, 18s. per cwt. TURPENTINE.—American, spot, 49s. 6d. per cwt. CASTOR OIL.—Pharmacy, spot, 40s. 6d.; firsts, 35s. 6d.; seconds, 33s. 6d. per cwt.

Nitrogen Fertilisers

THE International Nitrogen Agreement which governed prices last season has now expired and negotiations for its renewal have not been successful. Prices for sulphate of ammonia and nitrate of soda for the coming season have not yet been fixed, but it is expected that they will show a considerable reduction on last season's prices.

South Wales By-Products

THERE is no change in South Wales by-product activities. Business continues to be poor and sporadic, and there are no prospects of any early improvement. A number of big pitch users have been in the market for moderate forward quantities, but the supply is still in excess of demand. Quotations are firm about 13s. per 40-gallon barrel. Naphthas are quiet, solvent having a small demand, while heavy is scarcely in request. Refined tars have a fairly steady, though moderate, call, with quotations for coke-oven and gas-works tar unchanged. Patent fuel and coke exports continue to be slow. Patent fuel prices, for export, are:—20s. to 20s. 6d., ex-ship Cardiff; 19s. to 19s. 6d., ex-ship Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 22s. 6d. to 25s.; furnace, 16s. 6d. to 17s. 6d.

Scottish Coal Tar Products

NEW business has been scarce during the week owing to the Glasgow Fair holidays. Prices are irregular; products in plentiful supply.

Cresylic Acid.—Very little interest is being shown and quotations are unchanged. Pale, 99/100%, 1s. 5d. to 1s. 6d. per gallon; pale, 97/99%, 1s. 3d. to 1s. 4d. per gallon; dark, 97/99%, 1s. 2d. to 1s. 3d. per gallon; all f.o.r. in bulk. High boiling is scarce with value firm at 2s. to 2s. 6d. per gallon, according to quality.

Carbolic Sixties.—Market is dull and value is nominal at 1s. 1d. to 1s. 3d. per gallon, according to water content.

Creosote Oil.—Supplies of virgin oils are not too plentiful. Specification oils, 2¼d. to 3d. per gallon; washed oil, 3¼d. to 3½d. per gallon; gas works ordinary, 3½d. to 3¾d. per gallon; all f.o.r. in buyers' rail tanks.

Coal Tar Pitch.—Inquiries for forward are plentiful but few contracts have been arranged. Export value is 40s. to 42s. 6d. per ton, home market 37s. 6d. to 40s. per ton, ex makers' works.

Blast Furnace Pitch.—Prices are unchanged at 30s. per ton, f.o.r. works for home trade, and 35s. per ton f.a.s. Glasgow for export.

Refined Coal Tar.—Works were called upon to deliver large quantities before closing down for the holidays. Value is steady at 2½d. to 2¾d. per gallon in buyers' packages f.o.r. works.

Blast Furnace Tar.—Quiet at 2¾d. per gallon f.o.r.

Crude Naphtha.—Production is small and quotations range between 4¼d. and 5¼d. per gallon according to quality.

Water White Products.—Few orders are being received and quotations are irregular. Motor benzole is 1s. 4d. to 1s. 5d. per gallon; *90/160 solvent is 1s. 3d. to 1s. 4d. per gallon, and 90/190 heavy* solvent, 1s. 1d. to 1s. 2d. per gallon.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, July 23, 1931.

THE Scottish heavy chemical market reports a dull period on account of the Glasgow Fair holidays.

Industrial Chemicals

ACETONE.—B.G.S.—£60 to £63 per ton, ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £47 to £58 per ton; pure, £37 5s. per ton; technical, 80%, £36 5s., delivered in minimum lots of 1 ton.

ACID, BORIC.—Granulated commercial, £22 per ton; crystals, £23 per ton; B.P. crystals, £31 per ton; B.P. powder, £32 per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at 3¼d. per lb., ex store. On offer from the Continent at 3¼d. per lb., ex wharf.

ACID, SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality, £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 1s. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 11¾d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted round about £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 10s. per ton., c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10½d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Spot material obtainable at round about £24 per ton, ex wharf. On offer for shipment from China at about £22 per ton, c.i.f. U.K.

ARSENIC, WHITE POWDERED.—Quoted £22 10s. per ton, ex wharf. Spot material still on offer at £22 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £9 10s. per ton, c.i.f. U.K. ports. For Continental materials our price would be £8 10s. per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £4 7s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £29 per ton, ex store. Continental on offer at about £27 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 per ton, ex wharf.

LEAD, RED.—Price now £30 per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £38 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £32 to £34 per ton c.i.f. U.K. ports. Brown on offer at about £1 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 10s. per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p. quoted 1s. 8d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4¼d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer, £25 10s. per ton ex store. Offered from the Continent at £24 15s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100% POWDER.—Quoted £26 15s. per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5½d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb. ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb. ex wharf

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77% £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-ton lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station. minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Chilean producers now offer at £10 per ton, carriage paid, buyer's sidings, minimum six-ton lots.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf. to come forward.

SODIUM SULPHATE (SALTCAKE).—Price, 60s. per ton, ex works; 65s. per ton, delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyers' works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £8 10s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

British Glues and Chemicals, Ltd.

Glues Produced in Bead Form

THE eleventh ordinary general meeting of British Glues and Chemicals, Ltd., was held on Thursday, July 16, at the Connaught Rooms, Great Queen Street, London, Mr. T. Walton, the chairman of the company, presiding.

In the course of his report, the chairman said that the past has been an extremely difficult year, by reason of continued and steep price-shrinkage in the world values of some of their main productions. Their fats and greases are realising lower prices than at any time within the past 30 years at least—much less than half of their price a couple of years ago; but he believed competitive substitutes cannot be produced at to-day's prices. The cost of the principal raw material has also fallen, but more slowly, and it is due to these two circumstances that he had to report a disappointing profit—an experience common throughout this particular industry.

Progress in Fertiliser Business

Since the close of the period covered by the company's accounts, the sale of a small portion of the company's business has been concluded with Doughty-Richardson Fertilisers, Ltd., of Lincoln, on terms considered advantageous to the company. This was the agricultural merchanting and compound fertiliser business which was conducted from the Newark branch, in commodities which did not form part of the main business of British Glues and Chemicals.

It was also mentioned that consideration of customers' convenience has resulted in the development of production of glues in a "bead" or "drop" form, in substitution for the older cake form. The company's Cascade glue is manufactured in this newer form, and, being more easily handled as well as more readily soluble, is finding an increasing demand among those of their customers to whom those qualities are an advantage. A highly-trained technical staff is at all times at the disposal of prospective users with a view to the production of glues, gelatines, and other adhesives with the qualities any particular trade most needs.

Mr. Harold J. Cotes (managing director) seconded the resolution, moving the adoption of the report and accounts for the year ended April 30, 1931, which was unanimously carried. The retiring directors (Mr. Oliver Quibell and Mr. E. Boyd Quibell) were re-elected.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, July 23, 1931.

Apart from one or two of the principal lines of "heavies," which are reported to be moving off fairly well, only a moderate weight of business is being done on the chemical market here, the holiday season adding to the effect of the prevailing quietness in the consuming industries. Deliveries of textile chemicals, in particular, although not unsatisfactory in the circumstances, are much below the aggregate volume of more normal times. This week fresh inquiry has, for the most part, been restricted to near delivery positions.

Heavy Chemicals

Not much buying interest is being displayed in sulphide of sodium, but offers of this material show little change, the commercial grade being quoted at from £7 15s. to £8 per ton, and the 60-65 per cent. concentrated solid at £9. Phosphate of soda, also, is rather quiet at £10 to £10 10s. per ton for the di-basic quality. A fair trade is passing in the case of bicarbonate of soda and prices in this section are firm at £10 10s. per ton. Hyposulphite of soda has been in moderate inquiry this week and at round £9 5s. per ton for the commercial grade and from £15 to £15 10s. for the photographic values have been maintained. Contract offers of caustic soda range from £12 15s. to £14 per ton, according to quality, and the movement in this section is reported to be of fair extent. The demand for prussiate of soda is on the quiet side, but at 4¾d. to 5¼d. per lb., quotations are reasonably steady. Alkali is firm on the basis of £6 per ton for the 58 per cent. grade and a quietly steady business is going through. Bichromate of soda is in moderate request, with offers still in the region of 3½d. per lb., less discounts of 1 to 2½ per cent. Chlorate of soda is about unchanged on the week at round £26 10s. per ton, with the demand on rather quiet lines. Saltcake keeps steady at from £2 17s. 6d. per ton.

Among the potash compounds, yellow prussiate sales are of moderate extent and there has been no change in the price position, current offers ranging from 6¾d. to 7¼d. per lb., according to quantity. The demand for permanganate of potash is quiet; the B.P quality is quoted at from 5¼d. to 5½d. per lb., and the commercial at about 5d. Carbonate of potash is selling in moderate quantities at a top figure of about £24 10s. per ton. There has been no appreciable change in the position of chlorate of potash; inquiry has been rather subdued, but prices have been maintained at round £27 10s. per ton. Bichromate of potash is steady and the demand continues moderate at 4¼d. per lb., less 1 to 2½ per cent. With regard to caustic potash, the tendency seems still to be easy at from £27 10s. to £28 per ton.

Arsenic continues very firm at up to £20 10s. per ton, at the mines, for white powdered, Cornish makes, and seems likely to remain so for the present in view of the comparative scarcity. The demand for sulphate of copper is very moderate, but, although uncertain in tendency, values show little change on balance at about £18 10s. per ton, f.o.b. The lead products have been maintained at £31 per ton for brown acetate and £32 10s. for white, with nitrate quoted at about £29. The acetates of lime are attracting limited attention; grey is on offer at round £12 per ton and brown at £7 5s. to £7 10s.

Acids and Tar Products

Tartaric acid is in quiet demand, with values at the lower range of 10¾d. to 11d. per lb. There is a moderate movement of citric acid at round 11¾d. per lb. Acetic acid prices are steady and unchanged at £51 per ton for the technical glacial quality and about £37 for the 80 per cent. commercial. Sales of oxalic acid are quiet, but prices are steady at £1 14s. per cwt., ex store.

Pitch is steady at from 42s. 6d. up to 47s. 6d. per ton, f.o.b., with next season's order books being slowly added to. The demand for creosote oil is quiet, but prices are maintained at 3d. to 4¼d. per lb., according to quality. Crude carbolic is steady at up to 1s. 3d. per gallon, naked, with crystals at round 5¼d. per lb., f.o.b. Solvent naphtha is quiet at from 1s. 2d. to 1s. 2½d. per gallon, naked.

Company News

Major and Co., Ltd.—The report for the year to March 31 last states that the balance brought forward was £2,928, to which is added a profit for the year ended March 31, 1931, of £13,739, making £16,667. It is recommended that the directors' fees be paid and that the balance be carried forward.

W. and H. M. Goulding.—The directors recommend a dividend at the rate of 5½ per cent. per annum on the preference shares and 6 per cent. per annum on the ordinary shares for the year ended June 30, 1931, payable in two equal instalments on July 31 and December 31 next. The net profits for the year, subject to audit, are £35,249.

Veno Drug Co. (1925), Ltd.—The directors announce that the dividends on the 8 per cent. cumulative preference shares and on the 12 per cent. cumulative preferred ordinary shares for the six months ended January 31, 1931, will be paid on July 29. The payment of these dividends was postponed in January last pending the directors' consideration of the accounts for the year to March 31 last.

Continental Tintex and Dye Products.—The report for the year to March 31, 1931, states that the present board assumed office November 10, 1930. Immediate steps were taken to cut down expenditure, and this has been reduced to a figure which the directors consider minimum for time being. Agreements for sale of products in certain countries have been successfully concluded and negotiations are in progress in regard to others. The greater part of the capital of the company has been irretrievably lost, and it is therefore proposed to obtain powers to reduce the capital to a figure more in accord with the existing financial position. On counsel's advice the company has instituted proceedings against certain of the previous directors and British-American Joint Stock Trust for recovery of certain moneys. The accounts show a loss of £13,946, increasing the debit brought in to £37,804. Preliminary expenses stand at £31,131.

Lovering China Clays, Ltd.—The accounts for the year ended March 31 show a net loss, after providing for debenture interest, etc., of £10,656. Allowing for the credit balance brought forward of £2,937, there remains to be carried forward an adverse balance of £7,719. For the previous accounting period of 11 months to March 31, 1930, there was a net profit, after allowing for the balance of income-tax liability (£6,477) to March 31, 1930, of £18,438, and a dividend of 5 per cent. was paid, requiring £15,500. The adverse results are attributed to the reduction of the tonnage sold, occasioned by the severe world depression in trade, together with the heavy fall in prices following the liquidation of the China Clay Associations in December, 1930. The purchases of the business of the St. Austell Milling and Trading Co., and of the West Carclaze China Clay Co. have been completed in the period under review. The item of preliminary expenses shown by the last accounts has been reduced to £14,355, by the application of the balance of capital reserve account, less tax, and of certain non-recurring capital profits derived during the year.

"Industria Britanica": The New Benn Journal

The first number of *Industria Britanica*, a new monthly journal published by Benn Brothers, Ltd., with the special object of developing British trade with South America, is a handsomely produced publication, with some 45 pages of British trade announcements. It is printed in Spanish, is sold at a shilling, has the active support of the Federation of British Industries, and contains a *facsimile* reproduction of a special message from the President of the Argentine Republic. Its editor, Mr. John A. Benn, was prevented from taking his full share in the production of the first issue, owing to his having to undergo an operation for appendicitis, from which he has now happily recovered. So well, however, had the arrangements been made, and so loyally did his colleagues come to his aid, that the issue has not materially suffered. The articles are varied, informative, and thoroughly practical, and the new journal promises to play a large part in making British products better known in the great South American markets. The demand for the first number shows how heartily *Industria Britanica* is welcomed by firms interested in those markets.

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MANUFACTURED in a range of sizes from 6 to 1200 cubic feet per minute capacity, the "Broomwade" Rotary Machine is super-efficient, and its running speed and low starting torque enable it to be direct coupled to comparatively high speed squirrel-cage motors or other forms of driving units.

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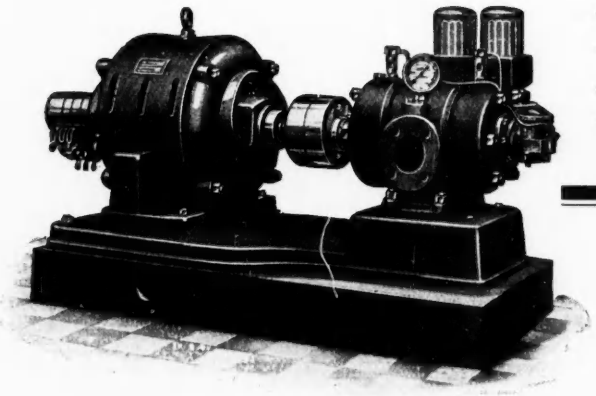

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New Chemical Trade Marks

Applications for Registration

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to August 16, 1931.

VULCABOND.

523,633. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester; manufacturers. June 16, 1931.

COLACREO.

523,654. Class 1. Wood preservatives. Oscar Theodore Baldwin-Retlaff, trading as Merchanting and Distributing Co., Norway Wharf, Commercial Road, Limehouse, London, E.14; merchant. June 17, 1931.

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

BRAZIL.—A firm in Rio de Janeiro wishes to obtain the representation of British exporters of linseed oil raw and boiled. (Ref. No. 80.)

HAYTI.—The Public Works Department of the Haytian Government is calling for tenders to be presented in Port-au-Prince by August 8, for the supply of 210 gallons of paint. (Ref. B.X. 7,119.)

Trade Publications

GENERAL CHEMICAL PLANT, evaporators, vertical heaters, filter presses, condensing plant for evaporators and vacuum pans, mixing vessels, centrifugals, fine grinding equipment and rotary driers are illustrated in a new brochure issued by George Fletcher and Co., Ltd., of Derby.

NEW CATALOGUES have been issued by A. Gallenkamp and Co., Ltd., of 17/20, Sun Street, Finsbury Square, London, E.C.2. List No. 80 C relates to electro-chemical apparatus, including the electro-analysis of metals, electrometric determination of hydrogen ions and conductivity of electrolytes. List No. SS 101 H deals with surplus stock apparatus, including balances, glassware, metal and porcelain ware.

ULTRA-VIOLET LAMPS for technical uses, including many models not previously known, are described in a new booklet issued by the British Hanovia Quartz Lamp Co., Ltd., of Slough, who have London showrooms at 3, Victoria Street, S.W.1. Many organic compounds have now been found to be reactive under the influence of ultra-violet radiations, and a number of polymerisations, condensations, oxidations and syntheses have been observed. The saponification of esters, polymerisation of hydrocarbons, and the synthesis of sugars, are typical examples. Some of these reactions have therefore become the basis of important industrial processes. Ultra-violet radiation has also an established place in photo-chemistry, spectrometry, polarimetry, interferometry, photo-microscopy, as well as photoelectric and absorption studies. It is applicable to the testing of paints, varnishes, rubber, dyes, inks, paper and textiles, and has been adopted for the irradiation of foodstuffs, and for drying, bleaching and deodorising oils and fats.

HECLA A.T.V. STEEL for steam fittings is the subject of a new brochure issued by Hadfields, Ltd., of Sheffield. This steel was introduced in 1920, and although its progress was at first slow, increasing appreciation of its merits, based on practical use, has rapidly extended its employment within the last few years.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

ALLIANCE ARTIFICIAL SILK, LTD., Oulton Broad. (M., 25/7/31.) Registered July 14, £262 debentures, part of £113,000; charged on property at Oulton Broad, also general charge. *Nil. April 8, 1930.

MACDONALD (R. F.) AND CO. (CHEMICAL MANUFACTURERS), LTD., Manchester. (M., 25/7/31.) Registered July 10, £1,000 (not ex.) debentures, to R. F. Macdonald, 8, Queen Street, Southport, and others; general charge. *Nil. December 14, 1930.

OLD STRAND CHEMICAL AND DRUG CO., LTD., London, E.C. (M., 25/7/31.) Registered July 13, £500 debenture, to H. A. Berens, 42, Mount Park Crescent, Ealing; general charge. *——. October 14, 1930.

Satisfaction

GRANCRETA CO., LTD., Leeds, manufacturers of chemical fertilisers, etc. (M.S., 25/7/31.) Satisfaction registered July 8, £200, registered March 17, 1928.

London Gazette, &c.

Companies Winding Up Voluntarily

BRITISH NATIONAL PETROLEUM REFINERIES, LTD. (C.W.U.V., 25/7/31.) By reason of its liabilities, July 9. Mr. Harold A. Leach, Windsor House, Victoria Street, London, S.W.1, appointed liquidator.

New Companies Registered

ARTHUR DUCKHAM AND CO., LTD., Allington House, Victoria Street, Westminster, London, S.W.1 Registered July 16. Nominal capital, £100 in £1 shares. Consulting, gas, mechanical, general, electrical, water supply, chemical and constructional engineers, heating specialists, manufacturers and builders of retorts, furnaces and ovens, gas makers, fuel manufacturers, etc. A subscriber: A. Duckham, High Warren, Ashtead.

DRESSEN AND STACQUEZ CHEMICAL MANUFACTURING CO., LTD., 61-2, Chancery Lane, London, W.C.2. Registered July 16. Nominal capital, £1,000 in £1 shares. To acquire the business of chemical manufacturers carried on by G. Dressen and P. Stacquez at Clavier, Belgium. Directors: P. A. L. Stacquez, G. A. A. L. Dressen.

OXYGEN INDUSTRIES, LTD., 145, St. Vincent Street, Glasgow. Registered July 15 in Edinburgh. Nominal capital, £1,000 in £1 shares. Manufacturers and producers of oxygen, acetylene, nitrogen, hydrogen, coal gas, carbon dioxide, carbide and other elements, compounds of mixtures, etc. Directors: Dr. J. D. Pollock, Sir John F. E. Green, G. Brown, R. W. McCrone, S. J. L. Hardie, R. G. Dawson, J. C. Wallace.

THE INTERNATIONAL MATCH CORPORATION OF GREAT BRITAIN, LTD. Registered as a "private" company on July 15. Nominal capital, £100 in £1 shares. To institute or participate in financial or any other business, to acquire any concessions, rights, monopolies, undertakings or business; to promote companies; to acquire and hold any bonds, stock, obligations or securities, etc. A subscriber: L. Wallis, 52, St. Margarets Road, St. Margarets.

MATCHES SECURITIES FINANCE CORPORATION, LTD. Registered as a "private" company on July 15. Nominal capital of £100 in £1 shares. To institute or participate in financial or any other business, to acquire any concessions, rights, monopolies, undertakings or business, to promote companies; to acquire and hold any bonds, stock, obligations, or securities, etc. A subscriber: T. G. Dow, Hillcroft, Beaconsfield Road, Claygate.